JAY MARTIN
CHAIRMAN

DANNY EARP
VICE-CHAIRMAN

CHUCK ENGELKEN
MEMBER

STEVE GILLETT
ALTERNATE

CITY OF LA PORTE DRAINAGE AND FLOODING COMMITTEE MEETING AGENDA

Notice is hereby given of a meeting of the Drainage and Flooding Committee of the City Council of the City of La Porte, to be held July 13, 2020, in the City Hall Council Chambers, 604 West Fairmont Parkway, La Porte, Texas, beginning at 5:00 pm to consider the following items of business.
Social distancing protocols will be in effect in the Council Chambers.
Remote participation is available, also. Attend via a screen using this link:
https://us02web.zoom.us/j/81308467354?pwd=elkwbHpNNWtsMHhOS2RrRjFBak5QQT09.
Join by phone at 877-853-5257 or 888-475-4499. The meeting ID is 813 0846 7354. The password is 483415.

1. CALL TO ORDER

2. CITIZEN COMMENT *(Generally limited to five minutes per person; in accordance with state law, the time may be reduced if there is a high number of speakers or other considerations.)*

3. STATUTORY AGENDA

(a) Presentation, discussion, and possible action to approve the June 8, 2020, meeting minutes. [Councilperson Jay Martin, Chairman]

(b) Presentation, discussion, and possible action regarding the Texas General Land Office grant funding opportunity. [Lorenzo Wingate, Assistant Director of Public Works]

(c) Presentation, discussion, and possible action regarding changes to drainage criteria recommended by Harris County. [Lorenzo Wingate, P.E., C.F.M., Assistant Director of Public Works]

(d) Presentation, discussion, and possible action regarding an interlocal agreement between the City of La Porte and the City of Pasadena related to land within the ETJ of the respective cities. [Lorenzo Wingate, Assistant Director of Public Works]

(e) Presentation, discussion, and possible action regarding the status of current drainage projects. [Lorenzo Wingate, Assistant Director of Public Works]

(f) Presentation, discussion, and possible action to provide staff with direction, if necessary, regarding additional drainage concerns. [Lorenzo Wingate, Assistant Director of Public Works]

4. SET NEXT MEETING

5. COMMITTEE COMMENT *Hear announcements concerning matters appearing on the agenda; items of community interest; and/or inquiries of staff regarding specific factual information or existing policy from the Committee members and City staff, for which no formal action will be discussed or taken.*

6. ADJOURN

If, during the course of the meeting and discussion of any items covered by this notice, the Drainage and Flooding Committee determines that a Closed or Executive Session of the Committee is required, then such closed meeting will be held as authorized by Texas Government Code, Chapter 551, Section 551.071 - consultation with counsel on legal matters; Section 551.072 - deliberation regarding purchase, exchange, lease or value of real property; Section 551.073 - deliberation regarding a prospective gift; Section 551.074 - personnel matters regarding the appointment, employment, evaluation, reassignment, duties, discipline, or dismissal of a public officer or employee; Section 551.076 - implementation of security personnel or devices; Section 551.087 - deliberation regarding economic development negotiation; Section 551.089 - deliberation regarding security devices or security audits, and/or other matters as authorized under the Texas Government Code. If a Closed or Executive Session is held in accordance with the Texas Government Code as set out above, the Drainage and Flooding Committee will reconvene in Open Session in order to take action, if necessary, on the items addressed during Executive Session.

Persons with disabilities who plan to attend this meeting and who may need auxiliary aids or services are requested to contact the City Secretary's office (281-470-5019), two working days prior to the meeting for appropriate arrangements.

Pursuant to Texas Government Code Sec. 551.127, on a regular, non-emergency basis, members may attend and participate in the meeting remotely by video conference.Should that occur, a quorum of the members will be physically present at the location noted above on this agenda.

Councilmembers may attend in numbers constituting a quorum. This is a Drainage and Flooding Committee Meeting at which there will be no deliberation or formal action taken by City Council as a governmental body.

CERTIFICATE

I, Lee Woodward, City Secretary, do hereby certify that a copy of the July 13, 2020, Drainage and Flooding Committee agenda was posted on the City Hall bulletin board, a place convenient and readily accessible to the general public at all times, and to the City's website, www.LaPorteTX.gov, in compliance with Chapter 551, Texas Government Code.

DATE OF POSTING _____

TIME OF POSTING _____

TAKEN DOWN _____

Lee Woodward

Lee Woodward, City Secretary

REQUEST FOR DRAINAGE & FLOODING COMMITEE AGENDA ITEM

Agenda Date Requested: July 13, 2020

Requested By: Lorenzo Wingate, P.E., C.F.M.

Department: Public Works

(•) Report ( ) Resolution ( ) Ordinance

Exhibits: TDEM HMGP Letter; CDBG-MIT Letter

Appropriation	
Source of Funds:	
Account Number:	
Amount Budgeted:	
Amount Requested:	
Budgeted Item:	( ) Yes ( ) No

SUMMARY

The City applied for a $4,000,000.00 grant through the Texas Division of Emergency Management (TDEM) for the Brookglen Subdivision Drainage Improvement Project. TDEM provided a notification letter dated April 13, 2020 indicating that the Brookglen Subdivision Drainage Improvement Project application was not selected for funding.

In a letter dated June 22, 2020, the Texas General Land Office (TXGLO) invited the City of La Porte to apply for supplemental CDBG Mitigation (CDBG-MIT) funding for the Brookglen Subdivision Drainage Improvement Project (DR-4332-271) that was not selected for TDEM funding.

The TXGLO supplemental funding program has specific requirements to benefit low to moderate income areas. This program does not require a non-federal cost share.

Staff has informed the TXGLO of the City's acceptance of the invitation to apply for CDBG-MIT funding for the Brookglen Subdivision Drainage Improvement Project. The City's application for CDBG-MIT funding is expected to be submitted to the TXGLO by September 30, 2020. Staff is has also prepared a solicitation to procure grant administration services to assist with this application process.

RECOMMENDED MOTION

Approved for Drainage Committee Agenda

Corby D. Alexander, City Manager

Date

TDEM
THE TEXAS A&M UNIVERSITY SYSTEM

[Date]

Mr. Corby Alexander
City Manager
City of La Porte
604 W Fairmont Pkwy
La Porte, Texas 77571-6215
alexanderc@laportetx.gov

Re: DR-4332-271 City of La Porte – Hazard Mitigation Grant Program (HMGP) Project
City of La Porte - Brookglen Subdivision Drainage Improvements

Dear Mr. Alexander:

Your HMGP project application has been designated as an alternate project under DR-4332 HMGP for Hurricane Harvey. This designation means that your project was not selected for funding. However, the project remains active with TDEM and will remain in consideration if additional funds become available through DR-4332.

Approximately $1 billion ($820.5 million federal share) in HMGP funds were made available for the state of Texas through Hurricane Harvey. TDEM received 565 applications valued at approximately $4.5 billion for these funds. While there were many strong applications, the demand was far greater than available funds.

I encourage you to seek funding for this project from other sources or future HMGP solicitations. As you may know, the Texas General Land Office (GLO) received funding from the U.S. Department of Housing and Urban Development (HUD) for Community Development Block Grant Mitigation funds (CDBG-MIT). Additional information regarding this program is available on the GLO website:

https://recovery.texas.gov/action-plans/mitigation-funding/index.html.

If you have any questions, please contact our staff at TDEM-Mitigation@tdem.texas.gov.

Respectfully,

Suzannah Jones

Suzannah Jones, CEM®
Deputy Chief, Recovery and Mitigation
Texas Division of Emergency Management

cc: Mr. Lorenzo Wingate, City Engineer
wingatel@laportetx.gov

TEXAS GENERAL LAND OFFICE
GEORGE P. BUSH, COMMISSIONER

June 22, 2020

The Honorable Mayor Louis R. Rigby
City of La Porte City Hall
604 W. Fairmont Parkway
La Porte, Texas 77590

RE: Invitation to Apply for State of Texas CDBG Mitigation (CDBG-MIT) HMGP Supplemental Funding

Dear Mayor Rigby:

The Texas General Land Office is pleased to announce the City of La Porte has been invited to apply for CDBG Mitigation (CDBG-MIT) funding as part of the Hazard Mitigation Grant Program (HMGP): Supplemental program for Drainage (DR-4332-271). The project was submitted to the Texas Division of Emergency Management (TDEM) for HMGP funding as a result of Hurricane Harvey (DR-4332-TX). The project was not able to be funded through TDEM's HMGP due to an oversubscription of the program. TDEM has since worked with the GLO to provide a list of unfunded projects that potentially meet selection criteria for the HMGP: Supplemental program outlined in the State of Texas CDBG-MIT Action Plan (Action Plan) that may specifically meet the low- and moderate-income national objective.

Through the application process the project will be reviewed to ensure compliance with CDBG-MIT eligibility requirements. The project must meet the low-and moderate- income national objective. The GLO will not require a non-federal cost share, also known as match. For additional details on this program, please review the Action Plan's section 4.4.5 found here: https://recovery.texas.gov/mitigation.

The GLO will need official documentation that City of La Porte has either accepted or declined the invitation to apply for funding for the project. Please send notification of acceptance or declination of the invitation to apply within two weeks of the date of this letter to Cynthia Hudson at the email listed below.

The application will be due 90-days from the date of your acceptance letter. Once the GLO receives acceptance of the invitation to apply, a grant manager will contact you or your authorized representative to begin the application process. Of course, you may use materials prepared for your original HMGP application to begin the process.

If you have questions or need any additional information, contact Cynthia Hudson, Director of Grant Management at Cynthia.Hudson.glo@recovery.texas.gov or 512-917-4073.

Sincerely,

Heather Lagrone
Sr. Deputy Director
Community Development & Revitalization

REQUEST FOR DRAINAGE & FLOODING COMMITEE AGENDA ITEM

Agenda Date Requested: July 13, 2020

Requested By: Lorenzo Wingate, P.E., C.F.M.

Department: Public Works

(•) Report ( ) Resolution ( ) Ordinance

Exhibits: Harris County Letter; COLP Storm Sewer Design Criteria; La Porte FIRMs

Appropriation	
Source of Funds:	
Account Number:	
Amount Budgeted:	
Amount Requested:	
Budgeted Item:	( ) Yes ( ) No

SUMMARY

In a letter dated May 12, 2020, the County Engineer for Harris County and the Executive Director of Harris County Flood Control District (HCFCD) recommended minimum drainage standards to the County Judge and Commissioners. The recommendation(s) presented by county staff encouraged that all cities within Harris County adopt minimum drainage standards consistent with Harris County's drainage standards in order to "ensure the benefits achieved by the 2018 Harris County Flood Control Bond Program are protected." The County Engineer and Executive Director of HCFCD also recommended "that no partnership projects, including flood control or county roadway projects, be constructed in these communities" unless the recommended drainage criteria are adopted by the community.

The potential changes are listed in the following table:

Harris County Requirement	Current COLP Requirement
Atlas 14 rainfall rates to size storm water conveyance and detension systems	5-year (ditches/culverts/stm swr); 25-year (100+ acres); 100-year (bridges; creeks; detention)
0.55 ac-ft/ac detention rate	0.45 ac-ft/ac detention rate
Prohibit detention design using hydrograph timing	Detention design based on detention rate; (consistinet with HC recommendation)
No net fill in the current 500-yr floodplain	Fill allowed within 500-yr floodplain; no net fill within 100-year floodplain
Finished floor elevation established at or waterproofed to the 500-yr flood elevation	Finished floor elevation established one foot above and/or waterproofed to the 100-yr flood elevation

Currently, for all projects within the City of La Porte that discharge into Harris County and/or HCFCD infrastructure, approval from the jurisdiction having entity is required. The requirements suggested by Harris County would impact projects that do not discharge into Harris County and/or HCFCD infrastructure. City staff anticipates that proposed no net fill within the 500-yr floodplain requirement and the proposed minimum finished floor elevation requirement have the potential to impact a significant amount of development within the City of La Porte.

The City of La Porte's Public Improvement Criteria Manual (PICM) was developed over fifteen (15) ago and has never been updated. The City's initial Flood's Ordinance was adopted in 1987, and has been amended over the years to remain incompliance with requirements of the National Flood Insurance Program (NFIP). To assist with the transition from current standards to the recommended Harris County standards, Harris County staff recommended that the County's current agreement with EHRA Engineering be extended to assist communities with evaluating and updating policies.

Staff is seeking direction from the drainage committee on the recommended course of action in response to the letter dated May 12, 2020, submitted to the Harris County Judge and Commissioners, by the County Engineer for Harris County and the Executive Director of Harris County Flood Control District.

RECOMMENDED MOTION

Approved for Drainage Committee Agenda

Corby D. Alexander, City Manager **Date**

HARRIS COUNTY
OFFICE OF THE COUNTY ENGINEER

1001 Preston, Suite 500
Houston, Texas 77002
(713) 755-5370

May 12, 2020

Honorable County Judge
& Commissioners

SUBJECT: Recommendation on Minimum Standards for Communities in Harris County and Draining to Harris County

Dear Court Members:

At the April 28, 2020, Commissioners Court, we were directed to recommend minimum standards for adoption by communities located in Harris County to ensure the benefits achieved by the 2018 Harris County Flood Control Bond Program are protected.

Our recommendation is that all cities within Harris County, and those entities located outside of Harris County but drain to Harris County, adopt the following minimum standards by December 31, 2020, and be effective within their municipal boundaries and extraterritorial jurisdiction:

- Use Atlas 14 rainfall rates for sizing storm water conveyance and detention systems.
- Require a minimum detention rate of 0.55 acre feet per acre of detention for any new development on tracts one acre or larger in size. However, a single family residential structure and accessory buildings proposed on an existing lot is exempt from providing detention.
- Prohibit the use of hydrograph timing as a substitution for detention on any project, unless it directly outfalls into Galveston Bay.
- Require no net fill in the current mapped 500-year floodplain, except in areas identified as coastal zones only
- Require the minimum Finished Floor Elevation (FFE) of new habitable structures be established at or waterproofed to the 500-year flood elevation as shown on the effective Flood Insurance Study.

It is further recommended that the County Engineer extend the current agreement with EHRA Engineering to assist communities in evaluating and updating their policies and ordinances upon their request at no cost to the community. As part of this process, these communities may identify additional requirements or criteria to implement depending on their flood risk and storm water infrastructure capacity.

To help reinforce participation, we also recommend that no partnership projects, including flood control or county roadway projects, be constructed in these communities after December 31, 2020, until such time their criteria is updated to reflect the above minimum standards. Partnership projects that are currently scheduled for construction in these communities before December 31, 2020, may continue as scheduled provided the communities are actively working with us to update their criteria. It should be noted that this effort is part of a larger Fix Flooding First initiative that will be presented to Commissioners Court for an official roll out in June 2020.

Sincerely,

John R. Blount, P.E.
County Engineer

Russell A. Poppe, P.E.
Executive Director
Harris County Flood Control District

JRB/RP/ed

CHAPTER 5
STORM WATER DESIGN CRITERIA

5.1 GENERAL PROVISIONS

Drainage Criteria for development within the City of La Porte, and where applicable within La Porte's Extraterritorial Jurisdiction (E.T.J.) is dependent upon the size and type of development, the conditions within the individual watershed, the conditions or design of the receiving stream, bayou, channel, roadside swale, culvert, or roadway.

The basic objective of this policy is to minimize the threat of flooding to areas within the City and its E.T.J. and to minimize the effect of continued development on individual watersheds.

1. The City believes that the best long-term means of accomplishing its objective is a continued program of improvement and extension of the Harris County Flood Control District's system of open channels. This statement recognizes the technical reality that an essential prerequisite to an effective flood control program is a system of open channels capable of carrying storm runoff of any type in Harris County to Galveston Bay without adversely impacting existing urban areas adjacent to the channels.

2. The City recognizes that both District's and City's existing open channel system is, in many instances, inadequate to accomplish the goal of eliminating existing flooding conditions for existing levels of urban development, or for ultimate development in the watershed.

3. The City therefore recommends that where required, certain additional flood control facilities be utilized to supplement the open channel system. Such flood control facilities shall be designed to preclude flooding in areas that do not presently flood and not increase flood levels where flooding now occurs. Specifically, the City supports the use of storm water detention to supplement the open channel system until long-term channel improvements can be completed, or as permanent facilities where additional open channel improvements are not feasible. The result will be that new development will limit or restrict the impact downstream.

5.1.1 All the drainage plans and construction shall meet or exceed the requirements of the City of La Porte, Harris County Flood Control, Harris County, TxDOT, or any other entities having jurisdiction over a facility (i.e. roadway, channel, etc.).

5.1.2 Unless otherwise provided for in these policies, development shall follow the Harris County Flood Control District Criteria Manual for the design of Flood Control and Drainage Facilities in Harris County, Texas.

5.1.3 If application of the policies and criteria contained in this document conflict with the City's duties under the Flood Hazard Prevention Ordinance, the regulations of the Flood Hazard Prevention Ordinance shall apply.

5.1.4 Drainage structures shall be constructed in such locations and of such size and dimensions to adequately serve the development and the contributing drainage area. In new developments, the developer shall provide all the necessary easements and rights-of-way required for drainage structures, including storm sewer and open or lined channels.

5.2 CONSTRUCTION PLAN REQUIREMENTS

5.2.1 A drainage map shall be included in the construction plans. The drainage area map shall include:

A. Drainage areas, including areas draining from off-site onto or adjoining the project
B. Design storm runoff, based on the type of facility and storm frequency listed in Section 5.4.
C. 100 – year runoff sheet flow pattern.
D. Route of overland flow including the overflow to a drainage channel or detention facility
E. Water surface profiles for the 25-year and/or 100-year storms in the outfall channel. All available information will be considered when making this determination.
F. Flow per inlet
G. Maximum ponding elevation
H. For bridge designs the 100-year WSEL must be shown on the plans and the low chord of the bridge must be a minimum of eighteen inches above the 100-year WSEL.

5.2.2 Detailed drainage calculations shall be submitted with the construction plans.

5.2.3 A lot grading plan should demonstrate that the finished grading plan will drain to approved collection and discharge points and that the overland flow of water from adjacent properties will not be impacted. A dedicated easement must be provided at the terminus to allow the 100-year event to sheet flow to the ultimate outfall. In no instance will plans be approved without specific detail as to how the 100-year event will sheet flow from the development to the outfall without adversely impacting structures.

5.2.4 The hydraulic gradient for the design storm may be shown on the construction drawings. Calculations for the elevation for the hydraulic gradient shall be provided with the design storm drainage calculations. The hydraulic gradient must be below the gutter line for the design storm. The tailwater elevations based on a 25-year frequency in the outfall channel shall be used for calculations of the hydraulic gradient.

If the 25-year WSEL is not available then use 80% of the ultimate channel height. In areas which are tidally influenced the mean high tide elevation will be used unless it is lower than the 25-year WSEL, in which case the higher value will be used. In instances where the 25-year WSEL in the receiving channel is lower than the top of pipe then the top of pipe shall be used as the starting point for HGL calculations.

5.2.5 The location of detention facilities required by these standards shall generally be in the vicinity of the lowest point of the property being developed. The city engineer has authority to make exceptions in the event that the runoff is conveyed via underground storm sewer facilities that accommodate the 100-year discharge.

5.3 USE OF PREVIOUSLY DESIGNED AND INSTALLED INFRASTRUCTURE

Situations where previously installed infrastructure is in place but not yet utilized to its design capacity will be considered on a case by case basis. The developers engineer shall after consultation with the City, prepare a report that:

a. outline the original design criteria
b. evaluates the impact of the original design on the receiving stream, adjoining properties and/or the 100 year Floodplain.

Based on the report, the City Engineer may allow full or partial use of the previously installed infrastructure and may require it to be supplemented with detention or other facilities.

5.4 STORM FREQUENCY, RUNOFF AND DATUM

A. Storm Frequency

All drainage improvements shall be designed for the following storm frequencies.

Type of Facility	
Road Side Ditches and Culverts	5 year
Storm Sewers	5 year
Ditches & Culverts Drainage 100 acres and more	25 year
Bridges	100 year
Creeks	100 year
Detention Facilities	Refer to Section 5.5

B. Storm Runoff

Design flow of storm water runoff is to be calculated using the Rational Method.

The Rational Method is based on the direct relationship between rainfall and runoff, and the method is expressed by the following equation:

$$Q = CIA, \text{ where}$$

Q is the storm flow at a given point in cubic feet per second (c.f.s).
C is a coefficient of runoff (see Table 1).
I is the average intensity of rainfall in inches per hour for a period equal to the time of flow from the farthermost point of the drainage area to the point under consideration. (See figure 1, I-D-F Curves and Figure 2, Determination of Time of Concentration)
A is the drainage area in acres

The size and shape of the watershed must be determined for each installation. The area of each watershed may be determined through the use of planimetric-topographic maps of the area, supplemented by field surveys in areas where topographic data has changed or where the contour interval is insufficient to adequately determine the direction of flow.

The outline of the drainage area contributing to the system being designed and outline of the sub-drainage area contributing to each inlet point shall be determined.

When calculating the peak flow rate of storm water runoff, rainfall intensity will be determined from the rainfall intensity, duration and frequency curves, shown in Figure 1. The storm frequency used for this determination will be according to the facility to be designed as listed in Section A.

1. Runoff Coefficients and Time of Concentration

Runoff coefficients, as shown in Table 1, shall be the minimum used, based on total development under existing land zoning regulations. Where land uses other than those listed in Table 1 are planned, a coefficient shall be developed utilizing values comparable to those shown. Larger coefficients may be used if considered appropriate to the project by the City Engineer.

The time of concentration is defined as the longest time, without unreasonable delay, that will be required for a drop of water to flow from the upper limit of a drainage area to the point of concentration. The time of concentration to any point in a storm drainage system is a combination of the "inlet time" and the time of flow in the drain. The inlet time is the time for water to flow over the surface of the ground to the storm drain inlet. Because the area tributary to most storm sewer inlets is relatively small, it is customary in practice to determine the

inlet time on the basis of experience under similar conditions. Inlet time decreases as the slope and the imperviousness of the surface increases, and it increases as the distance over which the water has to travel and retention by the contact surfaces.

Time of concentration shall be computed from Figure 2 and in no case shall the inlet time be more that the time shown in Table 1.

Table 1

Zone	Zoning District Name	Runoff Coefficient "C"	Maximum Inlet Time in Minutes
R-1	Low Density Residential	0.50	15
R-2	Mid Density Residential	0.60	15
R-3	High Density Residential	0.80	10
MH	Manufactured Housing District	0.55	15
NC	Neighborhood Commercial District	0.80	10
GC	General Commercial District	0.85	10
BI	Business Industrial Park District	0.85	10
LI	Light Industrial	0.85	10
HI	Heavy Industrial	0.85	10
PUD	Planned Unit Development District	variable	10 to 15

Miscellaneous Land Uses

Land Use	Runoff Coefficient "C"
Church	0.70 to 0.90
School	0.50 to 0.90
Park	0.30 to 0.70

C. Datum

All drainage plans shall be prepared based on North American Vertical Datum of 1988, 2001 adjustment, consistent with National Flood Insurance Program, Flood Insurance Study for the City of La Porte.

5.5 REQUIRED DETENTION

Detention Basins – Unless otherwise provided for in this Section, Detention Basins will be required for developments within the following watersheds.

Little Deer Creek – F212
- Upstream of Main Street

Little Cedar Bayou – F216
- Upstream of State Highway 146

Big Island Slough – B106
- All segments

Spring Gully – B109
- All segments

Willow Spring Bayou – B112

- All segments

Taylor Bayou – A104
- All segments

The listed watersheds are shown on Figure 3.

5.5.1 Design Standards for Detention Basins

Detention requirements for developments less than 50 acres shall be according to the following table. For developed areas of 10 acres or less, the required volume equals the total development area times the appropriate storage coefficient. For areas greater than 10 acres and less than 50 acres the volume is determined by applying Harris County Flood Control District criteria for small watersheds.

Table 2 (Also, See Figure 4)

Developed Area	Storage Coefficient
0 to 1 acres	0.20 acre ft. / acre
1 to 10 acres	0.45 acre ft. / acre
10 to 50 acres	per HCFCD criteria

For developments which are larger than 50 acres, Harris county Flood Control District and/or the City Engineer shall approve the detention facility criteria.

5.5.2 Outlet Sizing

1. The outlet structure shall be designed using the orifice equation as follows:

   $Q = CA \times (2gh)^{1/2}$

   Where,
   C = 0.8
   A = cross sectional area
   g = 32.2 feet / sec^2
   h = head differential

   For head differential use 2' or the 100-year water surface in pond minus the 25-year water surface in receiving channel, if available.

2. Minimum restrictor shall be 6" diameter.

5.5.3 Generally accepted areas of localized runoff to roadways and the ditches adjacent to them consists of 150-ft wide strips adjacent to the roadway right-of-way on each side of the road. Drainage from beyond this commonly accepted width zone is discouraged and should be directed to areas and/or drainage pathways to which natural drainage occurs. If such drainage cannot be safely directed to natural drainage pathways, on-site detention shall be required at a rate prescribed in this chapter to limit the peak rates of discharge to an acceptable level for discharge either to the roadway or natural drainage paths. Such event is prescribed by the design capacity of said receiving outfall.

5.5.3 Additional Standards for Detention Basins

The detention facility shall be designed for easy maintenance. For smaller developments the designer is encouraged to use parking lots, underground piping, swales, green spaces, etc. to achieve the volume required.

For larger developments every consideration shall be given to designing of the facility for multipurpose use, such as playgrounds, ballfields, miniparks, required green spaces, etc. to assure that maintenance will be accomplished. The design shall include the following:

1. an earthen detention basin shall have minimum side slopes of 4:1 and a minimum bottom width of ten feet;
2. the bottom of the detention basin shall have a minimum 0.50% cross slope to facilitate quick drainage.
3. a v-shaped trickle channel a minimum of 5' wide, six-inch thick, reinforced concrete shall be constructed through the detention basin at a longitudinal slope of 0.20% to accommodate low flow and facilitate rapid drainage. For developments less than 3 acres, the trickle channel may be 2 feet wide and 4" thick.
4. a minimum 12-foot wide maintenance berm shall be provided around the perimeter of the detention facility.
5. ingress and egress for maintenance including a dedicated right-of-way if required, shall be provided to the detention basin and clearly shown on the construction drawings or site plan subdivision plat.
6. the detention basins, slopes, bottom, maintenance berm, and other associated right-of-way shall be final graded with a minimum of 6" top soil then hydro-mulch or drill-seeded and watered to facilitate full grass coverage.
7. parties responsible for maintenance of the detention facility must be shown on the plat and or plans.
8. Pumped detention systems may be allowed with specific approval from the City Engineer.

5.5.4 Ownership and Maintenance of Facilities

The City will not accept maintenance of on site facilities that serve only one tract or development, unless it is determined to have other public benefits, is recommended by staff and approved by the Planning and Zoning Commission.

Harris County Flood Control District may, at their discretion, accept maintenance of facilities, provided they are designed in accordance with the District's criteria manual. Requests for Harris County Flood Control District to assume maintenance of any facility should be coordinated with the City prior to any development approvals.

5.5.5 Plat Review of Facilities

The rates of detention applicable to any development approved and authorized for construction shall be subject to the detention rate applicable to the size tract of land as configured on February 23, 2009. As part of the plat review process, the Planning Department shall utilize the configuration as shown in the Harris County Appraisal District maps dated, printed and kept on file as of the same date described herein. Any subdivision of land thereafter, whether or not by recorded plat, shall be subject to the detention rate as specified for the previously undivided tract.

5.6 ADDITIONAL DESIGN REQUIREMENTS

5.6.1 Discharge Points

The developer shall terminate all drainage improvements at a discharge point approved by the City. The developer shall design and construct such discharge point, or outlet, to prevent damage to or overflowing into adjacent property. The City may require creek improvement, channel lining, energy dissipaters or other improvements for such outlet to prevent erosion or increase the flow capacity. All piped outfalls into a receiving stream shall be at a 45° to the stream if pipe diameter is less than 42-inches and 30° to the stream is pipe is greater than 42-inches.

Finished elevations of new pavement, parking areas, or other improvements shall be designed so that each succeeding high point is lower when moving in a downstream direction. This ensures the 100-year discharge has an unobstructed path to the discharge point whether discharging to a channel or detention pond.

5.6.2 Public Streets as Drainage Facilities

1. Maximum depth of water to be allowed in local streets during design flow shall be at the top crown, or top of curb, whichever is less.
2. Maximum spread of water in collector streets during design flow shall allow for one clear lane of traffic (12 feet wide).
3. Maximum spread of water in arterial streets during design flow shall allow for two clear lanes of traffic (24 feet wide).
4. The street is to be designed to convey the 100-year event to the outfall point with successively lower high points. A dedicated easement must be provided at the terminus to allow the 100-year event to sheet flow to the ultimate outfall. In lieu of sheet flow it is allowable for the developer to construct an underground system to convey the 100-year event.

5.6.3 Drainage Channels and Structures

1. The developer shall install an underground storm drain on curb and gutter streets beginning at the point where calculated storm water runoff is of such quantity that it exceeds the height specified above. The developer shall construct the storm drain system from the point to an approved outlet.
2. For non-curb and gutter streets, the developer may use open channel (channel or ditch) methods to dispose of storm water specified above. Such channels may be in dedicated draining easements outside the standard street right-of-way upon City approval of the location and alignment of such easements. Alternatively, the developer may widen the street right-of-way to accommodate an open channel of greater capacity than the standard street/ditch section.
3. If the developer locates the channel in a widened street right-of-way, the City shall approve the right-of-way width and channel configuration. The depth of flow in the channel shall not exceed one (1) foot as measured from the ditch flowline to the point on the roadway established as the high water level in this section.
4. The developer shall design and construct all channels to terminate at an approved outlet.

5.6.4 Habitable Structures

The developer shall provide adequate means for storm water run-off in excess of the "design storm" capacity (i.e., 3, 10-year storm) to flow around habitable structures.

a.) The developer shall provide a grading/drainage plan which shows that all building sites can provide a finished floor elevation:

(1) At least one foot (1') above the top of the curb using the highest point along the portion of such curb fronting the building site, or
(2) At least one foot (1') above the crown of the road elevation, using the highest point along the portion of such road fronting the building site.
(3) At least one foot above the ground elevation along all sides of the building site.

b.) In addition to paragraph (a) above, the developer shall provide a grading/drainage plan which meets or exceeds the provisions of Chapter 94, Code of Ordinances, Flood Hazard Reduction.
c.) The developer shall design and construct all streets to minimize any fill required to bring building pads into compliance with this code.
d.) Alternate methods of building protection may be accepted by the City upon submittal of detailed information, review and approval by the City Engineer.

5.6.5 Drainage System Criteria

If an underground drainage system is required, and a 60-inch or smaller pipe will handle the design flow, pipe shall be used. If a 60-inch pipe is not adequate, the developer has the option to use concrete pipe or natural and/or a lined open drainage channel. If pipe is selected, the maximum allowable velocity shall be 8fps in the pipe. Lining materials, if used, shall be approved by the City.

5.6.6 Public storm sewers are defined as sewers and appurtenances that provide drainage for a public right-of-way, or more than one private tract, and are located in public right-of-way or easement, private storm sewers provide internal drainage for a reserve or other tract. Private storm or sewer connections to public storm sewers shall occur at a manhole or at the back of an inlet as approved by the City Engineer. All private storm sewers within the public right-of-way shall be constructed in conformance with the Standards.

5.6.7 All construction shall conform with the City of La Porte Construction Details.

5.6.8 All storm sewers shall meet or exceed the requirements of the "Drainage Criteria Manual for Harris County, Texas" and the requirements of the City of La Porte.

5.7 LOCATION OF STORM SEWER

5.7.1 Public storm sewers shall be located within a public street right-of-way or storm sewer easement, dedicated to the public and adjoining a public street right-of-way. Storm sewers through side lot drainage easements are highly discouraged. Limited use may be approved at the discretion of the City Engineer. If approved, a minimum twenty-foot (20') wide easement is required (10' on each lot).

5.7.2 Recommended alignment within a public street right-of-way.

A. Boulevard pavement section with median – along centerline of the right-of-way.
B. Undivided pavement section five feet (5') inside the right-of-way. For storm sewer located in a public street right-of-way, a minimum of two-foot (2') shall be maintained inside the right-of-way line to the outside edge of the storm sewer unless otherwise accompanied by an adjacent easement.
C. Alternate locations for a storm sewer may be permitted by the City Engineer.

5.7.3 Recommended alignment within an exclusive storm sewer easement.

A. Storm sewers placed in easements shall conform to the requirements of Section 2.4.5
B. Storm sewers within easements shall be placed no closer than five feet (5') measured from the outside edge of the pipe to the edge of an easement, except when adjoining another easement or public right-of-way where the distance may be reduced to two feet (2'). The storm sewer shall be placed in the center of the easement. When the storm sewer easement adjoins a public right-of-way, the easement may be reduced to a minimum of ten feet (10') and the storm sewer may be aligned close to the right-of-way line, as long as required clearances are met, with specific approval of the City Engineer.

5.8 STORM SEWER MATERIALS

5.8.1 Storm sewer and culvert pipe shall be precast reinforced concrete pipe, unless specifically approved by the City Engineer. Concrete pipe shall be manufactured in conformance with the

requirements of ASTM C 76, "Reinforced Concrete Culvert, Storm Drain, and Sewer Pipe," current revision. Reinforced concrete pipe shall be Class III or stronger. The design engineer shall provide for increased pipe strength when conditions of the proposed installation exceed the allowable load for Class III pipe. All concrete pipe constructed in water-bearing soil or forty-two inches (42") in diameter or larger, shall have rubber gasket joints meeting the requirements of ANSI/ASTM C 443, "Joints for Circular Concrete Sewer and Culvert pipe, Using Rubber Gaskets", current revision. Concrete pipe with diameter of less than forty-two inches (42") may be installed using pipe with tongue and groove type joint and Ram-nek, or approved equal, as a joint filler. When specifically approved by the City Engineer, reinforced concrete arch and elliptical pipe conforming to ASTM C506 and ASTM C507, respectively, current revision, may be installed in lieu of circular pipe. Reinforced concrete box culverts shall meet the minimum requirements of ASTM C789, "Precast Reinforced Concrete Box Sections for Culverts, Storm Drains, and Sewers", current revision. Pipe joints for arch and elliptical pipe and box culverts shall be sealed using Ram-nek or approved equal.

5.8.2 Storm sewer outfalls into open channels shall be constructed using corrugated steel pipe. Corrugated steel pipe shall be manufactured in conformance with the requirements of AASHTO Designation M-36-82, current revision. Pipe material shall be Aluminized Steel Type 2, meeting the requirements of AASHTO Designation M-27-79I, current revision, or Pre-coated Galvanized Steel, AASHTO M-246, 10 mil coating on both sides. All pipe shall have a full double coating, Type A, in accordance with AASHTO Designation M-190, current revision. Pipe joints and fittings shall meet the minimum requirements of these specifications and shall have an O-ring gasket seal meeting the requirements of AASHTO C-361, current revision. (See City of La Porte Construction Details).

5.8.3 Storm sewer outfalls shall have a slope protection to prevent erosion. Slope protection may be constructed of slope paving or rip rap. Slope paving shall be four-inch (4") five (5) sack concrete with six-inch by six-inch (6" x 6") welded wire mesh (W14 x W14) or three eighths inch (3/8") steel rebar on twenty-four-inch (24") centers, each way. Rip rap shall be a minimum of six-inch (6") broken concrete rubble with no exposed steel or well-rounded stone and shall be a minimum of eighteen inches (18") thick. Slope protection texturing shall be required where public access likely. Refer to the Construction Details for minimum dimensions.

5.9 ADDITIONAL REQUIREMENTS

5.9.1 Minimum depth of storm sewer (measured to the top of pipe) shall be twenty-four (24") below the top of curb or finished grade, whichever is lower. Minimum size storm sewer for main and inlet lead shall be twenty-four inches (24").

5.9.2 Storm sewers shall be bedded using cement stabilized sand (see specification in Section 4.2.3) as shown in the City of La Porte Construction Details.

5.9.3 Pipe requirements.

A. Reinforced concrete pipe installed at a depth greater than thirty feet (30') shall be designed by the engineer for the specific installation and approved by the City Engineer, Reinforced concrete pipe shall be designed in accordance with the American Concrete Pipe Association, "Concrete Pipe Design Manual", Maximum cover on the pipe shall be measured from the top of pipe to the ultimate finished grade or natural ground, whichever is greater.

B. Corrugated steel pipe shall have a minimum thickness as follows:

PIPE SIZE (Inches) Corrugations (Inches)	MINIMUM THICKNESS
242-2/3" X 1/2"	0.052
30- 482-2/3" X 1/21	0.064

54- 723't X 1" or 511 X 1"	0.064
78- 102311 X 1" or 5" X 1"	0.079

Bedding for corrugated steel pipe shall be cement-stabilized sand. Corrugated steel pipe less than or equal to fifty-four inches (54") in diameter and less than thirty feet (30') deep shall have the minimum thickness given above.

C. Design storm flow in a street shall not exceed the capacity of the street, for the water surface equal to the top or curb and shall not exceed the inlet capacity. Design storm flow shall meet Harris County criteria.

D. All bridges must be a minimum of eighteen inches (18") above the 100-year water surface elevation or in accordance with the Federal Emergency Management Agency (FEMA) regulations , latest revisions, or HCFCD requirements, whichever is greater.

5.9.4 Storm sewers less than forty-two inches (42") in diameter shall be constructed on a straight horizontal and vertical alignment between manholes. Storm sewers greater than or equal to forty-two inches (42") in diameter may be laid along a curve using manufactured bends of less than or equal to 11¼ degrees.

5.10 APPURTENANCES

5.10.1 Manholes

A. Manholes shall be placed at all changes in alignment, grade and size of the storm sewers; at the intersection of two or more storm sewers; at all inlet leads; and at the end of all storm sewers.
B. Maximum spacing between manholes shall be four hundred feet(400').
C. Manhole covers shall be cast iron, traffic bearing, type ring and cover with the words "storm sewer" cast into the cover.

5.10.2 Inlets

A. Curb inlets shall be spaced and sized to intercept the calculated runoff for the design storm. The water surface elevation at the inlet shall be less than or equal to the gutter for the design storm flow.
B. Maximum travel distance of water in the street to a curb inlet shall be three hundred feet (300') on a major thoroughfare and in a commercial area. The maximum travel distance of water in the street permitted in a single-family residential area shall be three hundred feet (300').
C. No Valley Gutter without prior approval.
D. Curb inlets should be on the intersecting side street at intersections with a major thoroughfare. The City Engineer shall specifically approve locations at intersections.
E. Grated inlets will not be permitted in an open ditch.
F. Backslope swale interceptors shall be placed in accordance with the requirements of Harris County.
G. Curb inlets shall have solid inlet lids. Grate or Curb and Grate inlets shall not be allowed for residential subdivisions. Curb inlets shall be recessed, unless otherwise directed by the City Engineer.
H. Backfill around inlets and to top of first stage inlet with cement stabilized sand.

NOTES TO USERS

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Coastal Base Flood Elevations shown on this map apply only landward of 0.0' North American Vertical Datum of 1988 (NAVD 88). Users of this FIRM should be aware that coastal flood elevations are also provided in the Summary of Stillwater Elevations table in the Flood Insurance Study Report for this jurisdiction. Elevations shown in the Summary of Stillwater Elevations table should be used for construction, and/or floodplain management purposes when they are higher than the elevations shown on this FIRM.

Boundaries of the **floodways** were computed at cross sections and interpolated between cross sections. The floodways were based on hydraulic considerations with regard to requirements of the National Flood Insurance Program. Floodway widths and other pertinent floodway data are provided in the Flood Insurance Study report for this jurisdiction.

Certain areas not in Special Flood Hazard Areas may be protected by **flood control structures**. Refer to Section 2.4 "Flood Protection Measures" of the Flood Insurance Study report for information on flood control structures in this jurisdiction.

The **projection** used in the preparation of this map was Universal Transverse Mercator, Zone 15. The **horizontal datum** was NAD83, GRS80 spheroid. Differences in datum, spheroid, projection or UTM zones used in the production of FIRMs for adjacent jurisdictions may result in slight positional differences in map features across jurisdiction boundaries. These differences do not affect the accuracy of this FIRM.

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NGS Information Services
NOAA, N/NGS12
National Geodetic Survey
SSMC-3, #9202
1315 East-West Highway
Silver Spring, Maryland 20910-3282
(301) 713-3242

To obtain current elevation, description, and/or location information for **bench marks** shown on this map, please contact the Information Services Branch of the National Geodetic Survey at **(301) 713-3242**, or visit their website at http://www.ngs.noaa.gov/.

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Please refer to the separately printed **Map Index** for an overview map of the county showing the layout of map panels; community map repository addresses; and a Listing of Communities table containing National Flood Insurance Program dates for each community as well as a listing of the panels on which each community is located.

The AE Zone category has been divided by a **Limit of Moderate Wave Action (LiMWA).** The LiMWA represents the approximate landward limit of the 1.5-foot breaking wave. The effects of wave hazards between the VE Zone and the LiMWA (or between the shoreline and the LiMWA for areas where VE Zones are not identified) will be similar to, but less severe than those in the VE Zone.

Contact the **FEMA Map Information eXchange** at 1-877-336-2627 for information on available products associated with this FIRM. Available products may include previously issued Letters of Map Change, a Flood Insurance Study report, and/or digital versions of this map. The FEMA Map Information eXchange may also be reached by Fax at 1-800-358-9620 and their website at http://www.msc.fema.gov/.

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Vertical Datum Adjustment due to subsidence is the 2001 adjustment.

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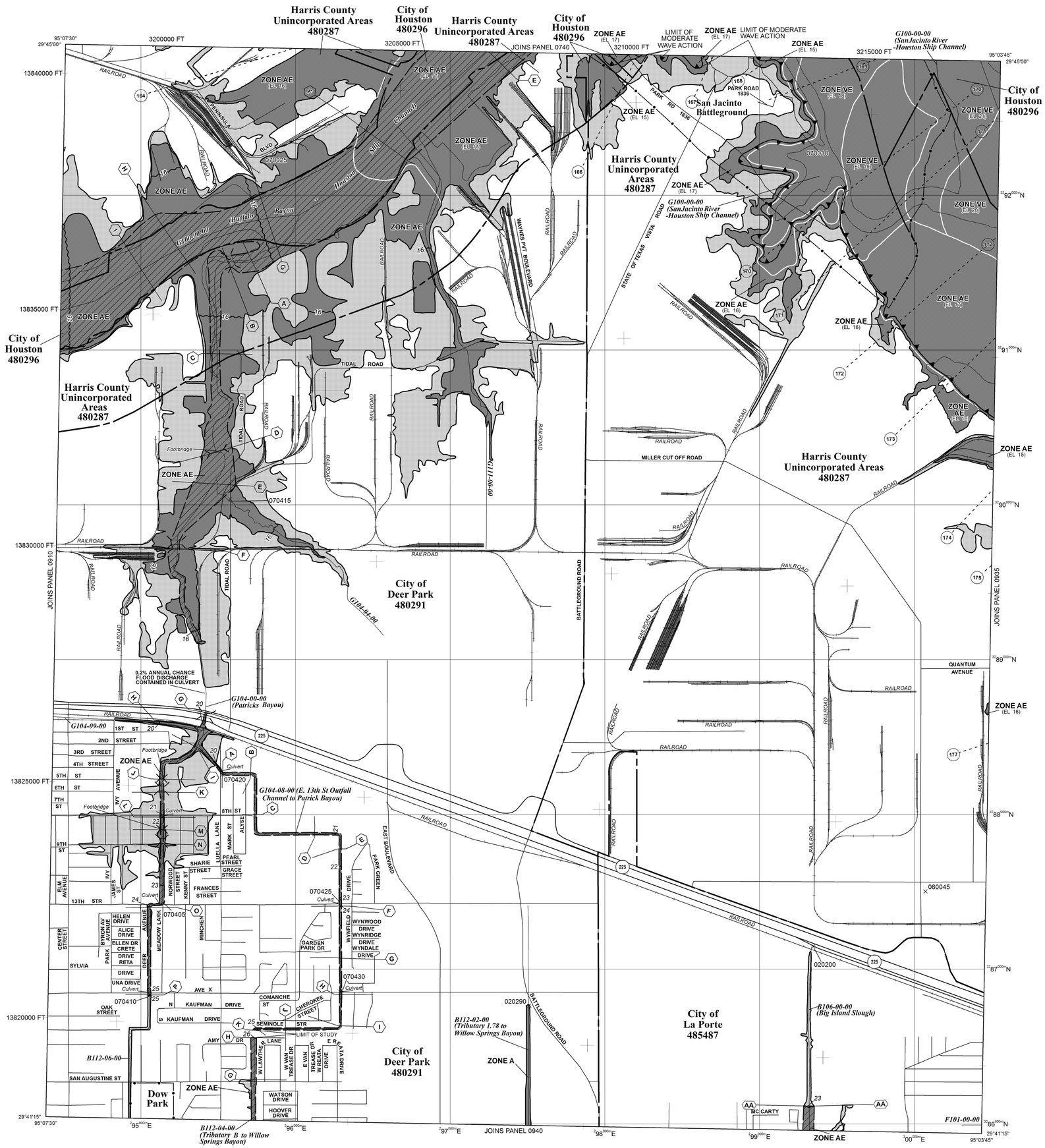
Some bridges and other structures shown on the detailed studied streams are not labeled. See corresponding flood profile for appropriate names.



LEGEND

SPECIAL FLOOD HAZARD AREAS SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

The 1% annual flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V, and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

ZONE A	No Base Flood Elevations determined.
ZONE AE	Base Flood Elevations determined.
ZONE AH	Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.
ZONE AO	Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.
ZONE AR	Special Flood Hazard Area formerly protected from the 1% annual chance flood by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.
ZONE A99	Area to be protected from 1% annual chance flood by a Federal flood protection system under construction; no Base Flood Elevations determined.
ZONE V	Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.
ZONE VE	Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

ZONE X	Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

ZONE X	Areas determined to be outside the 0.2% annual chance floodplain.
ZONE D	Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

	Floodplain boundary
	Floodway boundary
	Zone D boundary
	CBRS and OPA boundary
	Boundary dividing Special Flood Hazard Area Zones and boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths or flood velocities.
	Limit of Moderate Wave Action
513	Base Flood Elevation line and value; elevation in feet*
(EL 987)	Base Flood Elevation value where uniform within zone; elevation in feet*
* Referenced to the North American Vertical Datum of 1988	
A — A	Cross section Line
23 — 23	Transect line
87°07'45", 32°22'30"	Geographic coordinates referenced to the North American Datum of 1983 (NAD 83), Western Hemisphere
2766000mN	1000-meter Universal Transverse Mercator grid values, zone 15N
600000 FT	5000-foot grid values: Texas State Plane coordinate system, South Central zone (FIPSZONE 4204), Lambert Conformal Conic projection
DX5510 ×	Bench mark (see explanation in Notes to Users section of this FIRM panel)
● M1.5	River Mile

MAP REPOSITORY
Refer to listing of Map Repositories on Map Index

EFFECTIVE DATE OF COUNTYWIDE FLOOD INSURANCE RATE MAP

September 28, 1990

EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL

September 30, 1992
November 8, 1996
April 20, 2000
June 18, 2007
January 6, 2017

FOR REASON OF REVISION
SEE NOTICE TO FLOOD INSURANCE STUDY USERS IN THE FIS REPORT

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To determine if flood insurance is available in this community, contact your Insurance agent or call the National Flood Insurance Program at 1-800-638-6620.

MAP SCALE 1" = 1000'

500 0 1000 2000 FEET
300 0 300 600 METERS

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0930M

FIRM
FLOOD INSURANCE RATE MAP

HARRIS COUNTY, TEXAS
AND INCORPORATED AREAS

PANEL 930 OF 1150
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
DEER PARK, CITY OF	480291	0930	M
HARRIS COUNTY	480287	0930	M
HOUSTON, CITY OF	480296	0930	M
LA PORTE, CITY OF	485487	0930	M

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER
48201C0930M

MAP REVISED
JANUARY 6, 2017

Federal Emergency Management Agency

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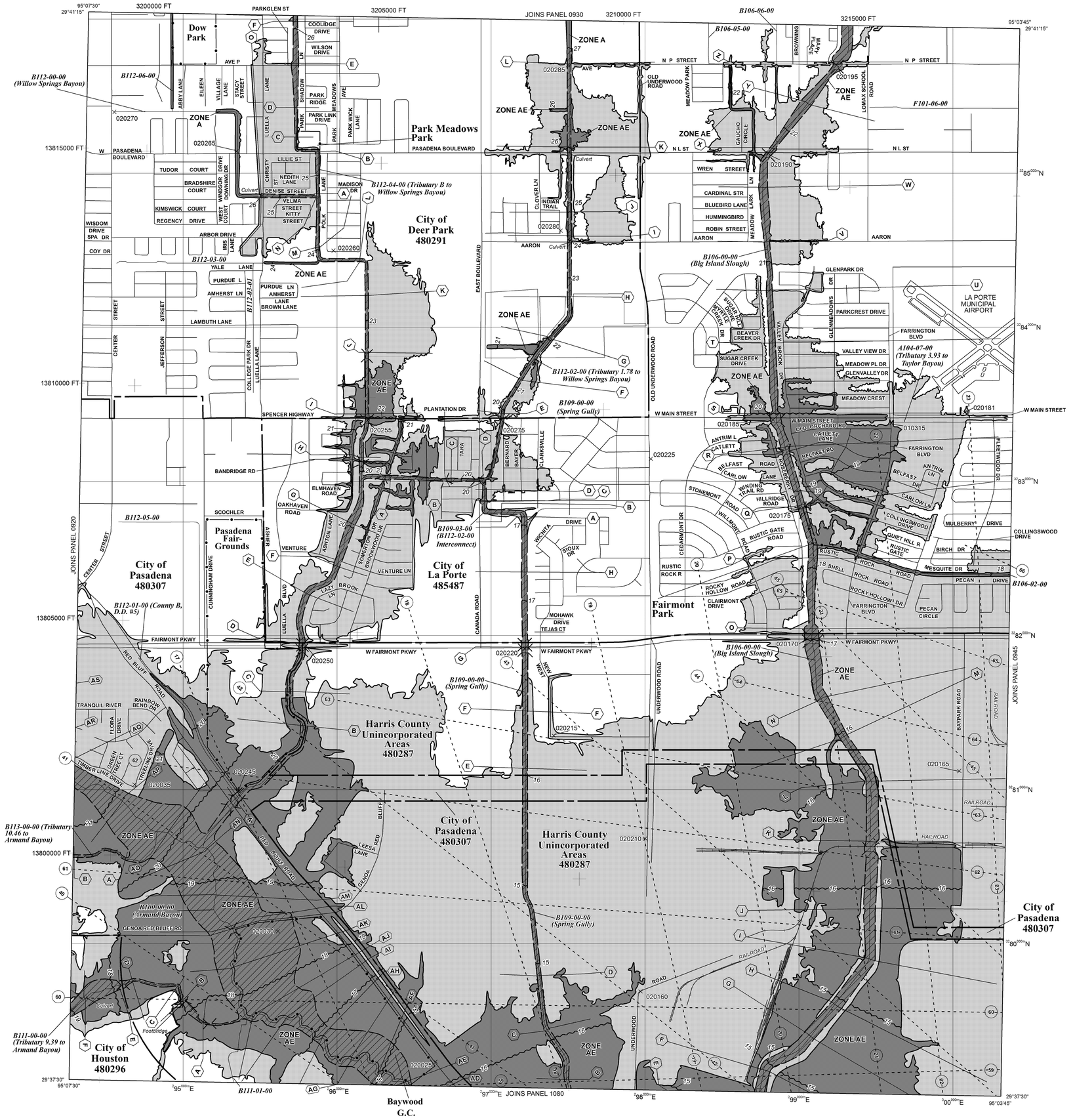

LEGEND

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OTHER FLOOD AREAS

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OTHER AREAS

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COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

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- Floodway boundary
- Zone D boundary
- CBRS and OPA boundary
- Boundary dividing Special Flood Hazard Area Zones and boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths or flood velocities.
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- * Referenced to the North American Vertical Datum of 1988
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- 23 — 23 — Transect line
- 87°07'45", 32°22'30" — Geographic coordinates referenced to the North American Datum of 1983 (NAD 83), Western Hemisphere
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- 600000 FT — 5000-foot grid values: Texas State Plane coordinate system, South Central zone (FIPSZONE 4204), Lambert Conformal Conic projection
- DX5510 × — Bench mark (see explanation in Notes to Users section of this FIRM panel)
- M1.5 — River Mile

MAP REPOSITORY
Refer to listing of Map Repositories on Map Index

EFFECTIVE DATE OF COUNTYWIDE FLOOD INSURANCE RATE MAP
September 28, 1990

EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL
September 30, 1992
November 6, 1996
April 20, 2000
June 18, 2007
January 6, 2017

FOR REASON OF REVISION
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500 0 1000 2000 FEET
300 0 300 600 METERS

NFIP NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0940M

FIRM
FLOOD INSURANCE RATE MAP

HARRIS COUNTY, TEXAS
AND INCORPORATED AREAS

PANEL 940 OF 1150
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
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HOUSTON, CITY OF	480296	0940	M
LA PORTE, CITY OF	485487	0940	M
PASADENA, CITY OF	480307	0940	M

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER
48201C0940M

MAP REVISED
JANUARY 6, 2017

Federal Emergency Management Agency

NOTES TO USERS

This map is for use in administering the National Flood Insurance Program. It does not necessarily identify all areas subject to flooding, particularly from local drainage sources of small size. The **community map repository** should be consulted for possible updated or additional flood hazard information.

To obtain more detailed information in areas where **Base Flood Elevations** (BFEs) and/or **floodways** have been determined, users are encouraged to consult the Flood Profiles and Floodway Data and/or Summary of Stillwater Elevations tables contained within the Flood Insurance Study (FIS) report that accompanies this FIRM. Users should be aware that BFEs shown on the FIRM represent rounded whole-foot elevations. These BFEs are intended for flood insurance rating purposes only and should not be used as the sole source of flood elevation information. Accordingly, flood elevation data presented in the FIS report should be utilized in conjunction with the FIRM for purposes of construction and/or floodplain management.

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Boundaries of the **floodways** were computed at cross sections and interpolated between cross sections. The floodways were based on hydraulic considerations with regard to requirements of the National Flood Insurance Program. Floodway widths and other pertinent floodway data are provided in the Flood Insurance Study report for this jurisdiction.

Certain areas not in Special Flood Hazard Areas may be protected by **flood control structures**. Refer to Section 2.4 "Flood Protection Measures" of the Flood Insurance Study report for information on flood control structures in this jurisdiction.

The **projection** used in the preparation of this map was Universal Transverse Mercator, Zone 15. The **horizontal datum** was NAD83, GRS80 spheroid. Differences in datum, spheroid, projection or UTM zones used in the production of FIRMs for adjacent jurisdictions may result in slight positional differences in map features across jurisdiction boundaries. These differences do not affect the accuracy of this FIRM.

Flood elevations on this map are referenced to the North American Vertical Datum of 1988. These flood elevations must be compared to structure and ground elevations referenced to the same **vertical datum**. For information regarding conversion between the National Geodetic Vertical Datum of 1929 and the North American Vertical Datum of 1988, visit the National Geodetic Survey website at http://www.ngs.noaa.gov or contact the National Geodetic Survey at the following address:

NGS Information Services
NOAA, N/NGS12
National Geodetic Survey
SSMC-3, #9202
1315 East-West Highway
Silver Spring, Maryland 20910-3282
(301) 713-3242

To obtain current elevation, description, and/or location information for **bench marks** shown on this map, please contact the Information Services Branch of the National Geodetic Survey at **(301) 713-3242**, or visit their website at http://www.ngs.noaa.gov/.

Base map information shown on this FIRM was provided in digital format by the Houston-Galveston Area Council and was revised and enhanced by Harris County.

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The AE Zone category has been divided by a **Limit of Moderate Wave Action (LiMWA).** The LiMWA represents the approximate landward limit of the 1.5-foot breaking wave. The effects of wave hazards between the VE Zone and the LiMWA (or between the shoreline and the LiMWA for areas where VE Zones are not identified) will be similar to, but less severe than those in the VE Zone.

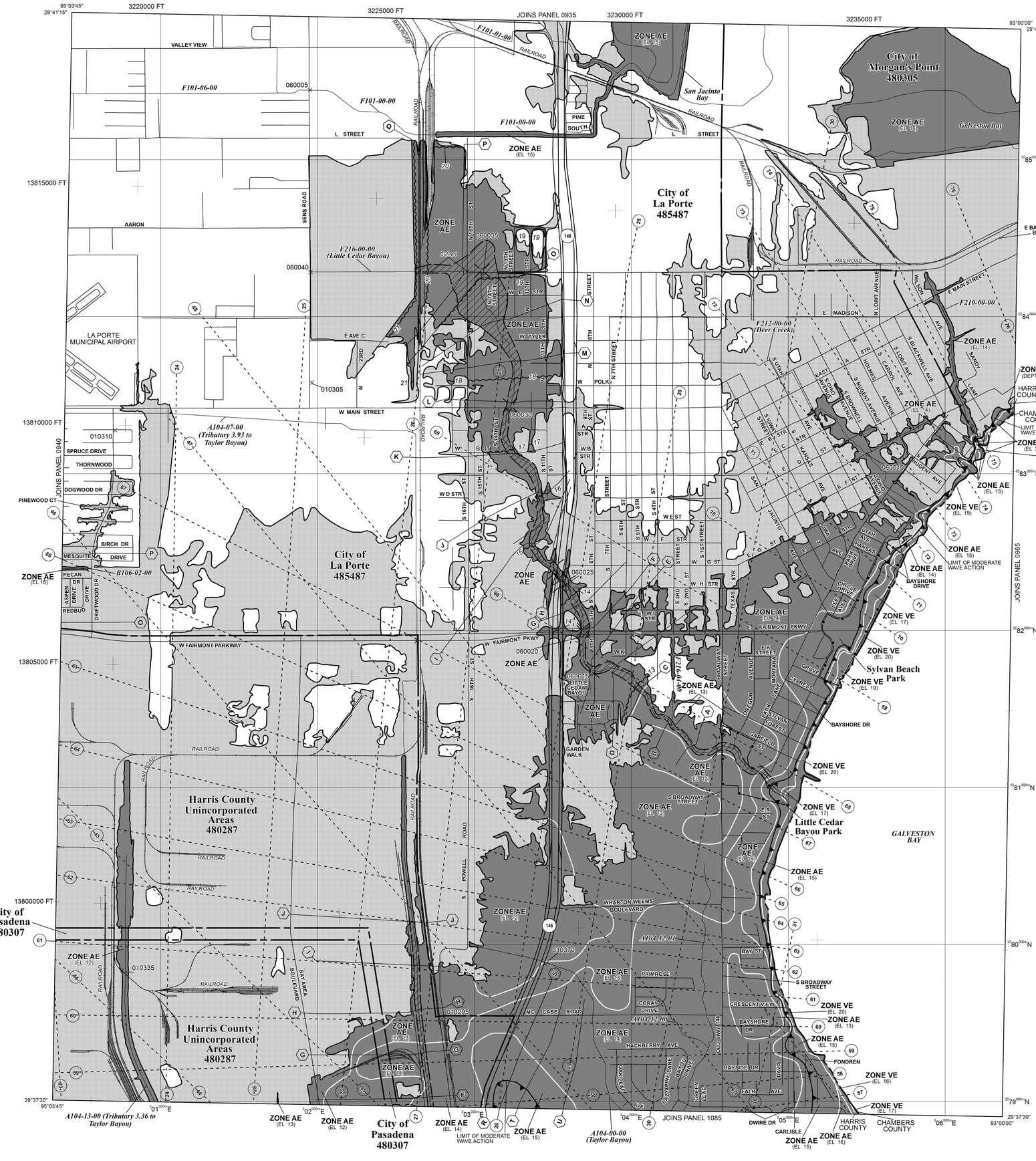
Contact the **FEMA Map Information eXchange** at 1-877-336-2627 for information on available products associated with this FIRM. Available products may include previously issued Letters of Map Change, a Flood Insurance Study report, and/or digital versions of this map. The FEMA Map Information eXchange may also be reached by Fax at 1-800-358-9620 and their website at http://www.msc.fema.gov/.

If you have **questions about this map** or questions concerning the National Flood Insurance Program in general, please call **1-877-FEMA MAP** (1-877-336-2627) or visit the FEMA website at http://www.fema.gov/national-flood-insurance-program.

Vertical Datum Adjustment due to subsidence is the 2001 adjustment.

Benchmarks shown on this map were provided by either Harris County or the National Geodetic Survey. To obtain elevation, description, and location information for benchmarks provided by Harris County, please contact the Permits Office of the Engineering Department at 713-274-3900 or visit their website at http://www.eng.hctx.net/permits. For information regarding the benchmarks provided by National Geodetic Survey, please see note above.

Some bridges and other structures shown on the detailed studied streams are not labeled. See corresponding flood profile for appropriate names.



LEGEND

SPECIAL FLOOD HAZARD AREAS SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

The 1% annual flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V, and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

ZONE A	No Base Flood Elevations determined.
ZONE AE	Base Flood Elevations determined.
ZONE AH	Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.
ZONE AO	Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.
ZONE AR	Special Flood Hazard Area formerly protected from the 1% annual chance flood by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.
ZONE A99	Area to be protected from 1% annual chance flood by a Federal flood protection system under construction; no Base Flood Elevations determined.
ZONE V	Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.
ZONE VE	Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

ZONE X	Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

ZONE X	Areas determined to be outside the 0.2% annual chance floodplain.
ZONE D	Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

- Floodplain boundary
- Floodway boundary
- Zone D boundary
- CBRS and OPA boundary
- Boundary dividing Special Flood Hazard Area Zones and boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths or flood velocities.
- Limit of Moderate Wave Action
- 513 (EL 987) — Base Flood Elevation line and value; elevation in feet*
- Base Flood Elevation value where uniform within zone; elevation in feet*

* Referenced to the North American Vertical Datum of 1988

- Cross section Line
- Transect line
- 87°07'45", 32°22'30" — Geographic coordinates referenced to the North American Datum of 1983 (NAD 83), Western Hemisphere
- 2776000mN — 1000-meter Universal Transverse Mercator grid values, zone 15N
- 600000 FT — 5000-foot grid values: Texas State Plane coordinate system, South Central zone (FIPSZONE 4204), Lambert Conformal Conic projection
- DX5510 × — Bench mark (see explanation in Notes to Users section of this FIRM panel)
- M1.5 — River Mile

MAP REPOSITORY
Refer to listing of Map Repositories on Map Index

EFFECTIVE DATE OF COUNTYWIDE FLOOD INSURANCE RATE MAP

September 28, 1990

EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL

September 30, 1992
November 6, 1996
April 20, 2000
June 18, 2007
January 6, 2017

FOR REASON OF REVISION
SEE NOTICE TO FLOOD INSURANCE STUDY USERS IN THE FIS REPORT

For community map revision history prior to countywide mapping, refer to the Community Map History table located in the Flood Insurance Study report for this jurisdiction.

To determine if flood insurance is available in this community, contact your Insurance agent or call the National Flood Insurance Program at 1-800-638-6620.

MAP SCALE 1" = 1000'

500 0 1000 2000 FEET

300 0 300 600 METERS

NFIP
NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0945M

FIRM
FLOOD INSURANCE RATE MAP

HARRIS COUNTY, TEXAS
AND INCORPORATED AREAS

PANEL 945 OF 1150
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
HARRIS COUNTY	480287	0945	M
LA PORTE, CITY OF	485487	0945	M
MORGAN'S POINT, CITY OF	480305	0945	M
PASADENA, CITY OF	480307	0945	M

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER
48201C0945M

MAP REVISED
JANUARY 6, 2017

Federal Emergency Management Agency

NOTES TO USERS

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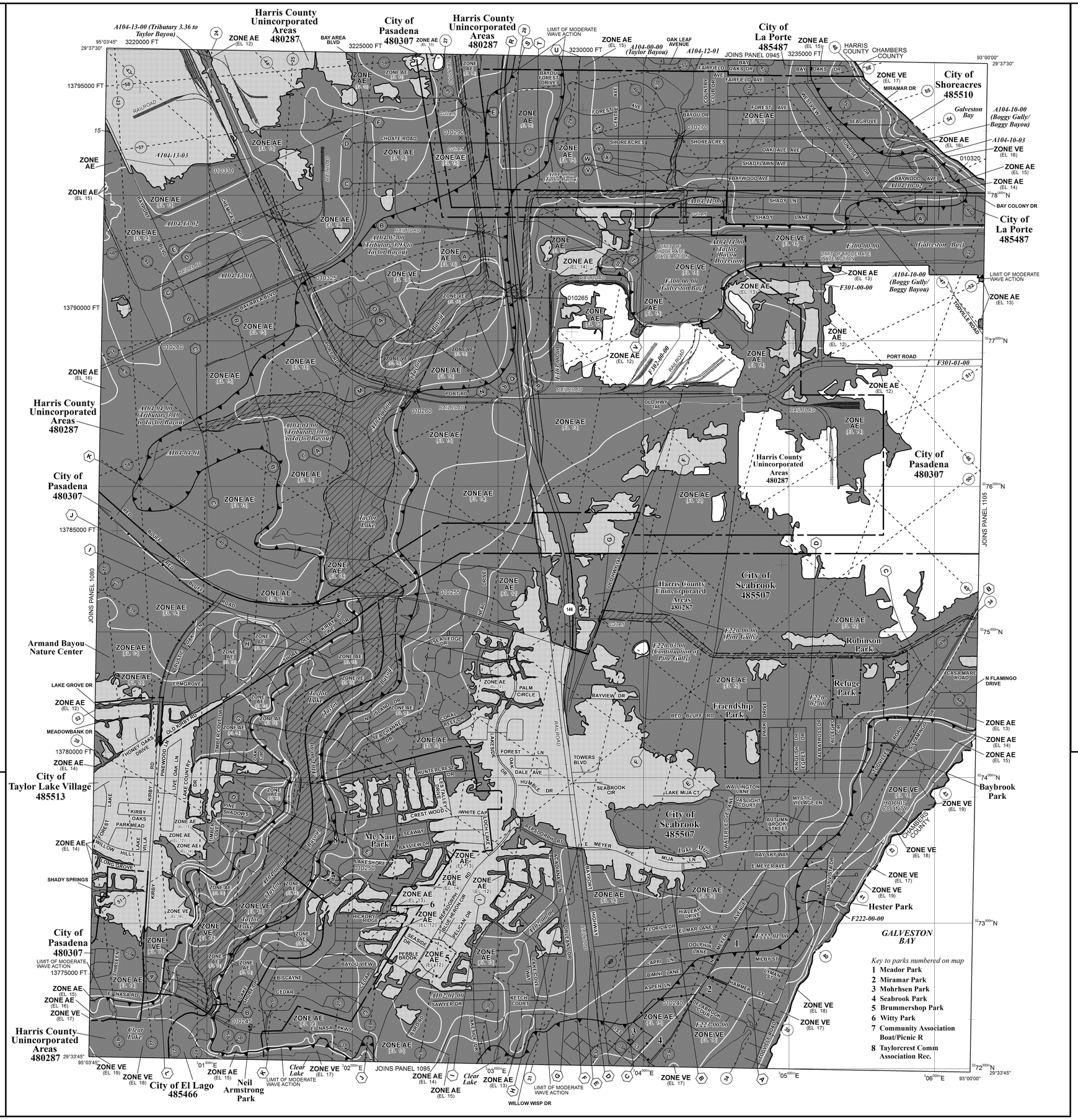

LEGEND

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OTHERWISE PROTECTED AREAS (OPAs)

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* Referenced to the North American Vertical Datum of 1988

- Cross section Line
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- M1.5 — River Mile

MAP REPOSITORY
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EFFECTIVE DATE OF COUNTYWIDE FLOOD INSURANCE RATE MAP
September 28, 1990

EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL
September 30, 1992
November 6, 1996
April 20, 2000
June 18, 2007
January 6, 2017

FOR REASON OF REVISION
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MAP SCALE 1" = 1000'
500 0 1000 2000 FEET
300 0 300 600 METERS

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 1085M

FIRM
FLOOD INSURANCE RATE MAP

HARRIS COUNTY, TEXAS
AND INCORPORATED AREAS

PANEL 1085 OF 1150
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
EL LAGO, CITY OF	485466	1085	M
HARRIS COUNTY	480287	1085	M
LA PORTE, CITY OF	485487	1085	M
PASADENA, CITY OF	480307	1085	M
SEABROOK, CITY OF	485507	1085	M
SHOREACRES, CITY OF	485510	1085	M
TAYLOR LAKE VILLAGE, CITY OF	485513	1085	M

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER
48201C1085M

MAP REVISED
JANUARY 6, 2017

Federal Emergency Management Agency

REQUEST FOR DRAINAGE & FLOODING COMMITEE AGENDA ITEM

Agenda Date Requested: July 13, 2020

Requested By: Lorenzo Wingate, P.E., C.F.M.

Department: Public Works

(•) Report ( ) Resolution ( ) Ordinance

Exhibits: Ordinance No. 2012-3421; Interlocal Agreement.

Appropriation	
Source of Funds:	
Account Number:	
Amount Budgeted:	
Amount Requested:	
Budgeted Item:	( ) Yes ( ) No

SUMMARY

At the June 8, 2020 Drainage Committee Meeting, the Committee requested legal's input regarding potential actions that could be taken against the City of Pasadena for failure to provide detention as outlined within the Interlocal Agreement established by Ordinance No. 2012-3421, providing for the exchange of 73 acres of land in the City of La Porte's ETJ for 99 acres of land within the ETJ of the City of Pasadena. The City Attorney is expected to attend this meeting to provide an update to the Committee.

RECOMMENDED MOTION

Approved for Drainage Committee Agenda

Corby D. Alexander, City Manager **Date**

ORDINANCE NO. 2012-3421

AN ORDINANCE APPROVING AND AUTHORIZING AN INTERLOCAL AGREEMENT BETWEEN THE CITY OF LA PORTE AND THE CITY OF PASADENA, FOR REAPPORTIONMENT OF EXTRATERRITORIAL JURISDICTION BOUNDARIES; MAKING VARIOUS FINDINGS AND PROVISIONS RELATING TO THE SUBJECT; FINDING COMPLIANCE WITH THE OPEN MEETINGS LAW; PROVIDING AN EFFECTIVE DATE HEREOF.

BE IT ORDAINED BY THE CITY COUNCIL OF THE CITY OF LA PORTE:

Section 1. The City Council hereby approves and authorizes the contract, agreement, or other undertaking described in the title of this ordinance, a copy of which is on file in the office of the City Secretary. The Mayor is hereby authorized to execute such document and all related documents on behalf of the City of La Porte. The City Secretary is hereby authorized to attest to all such signatures and to affix the seal of the City to all such documents.

Section 2. The City Council officially finds, determines, recites, and declares that a sufficient written notice of the date, hour, place and subject of this meeting of the City Council was posted at a place convenient to the public at the City Hall of the City for the time required by law preceding this meeting, as required by the Open Meetings Law, Chapter 551, Texas Government Code; and that this meeting has been open to the public as required by law at all times during which this ordinance and the subject matter thereof has been discussed, considered and formally acted upon. The City Council further ratifies, approves and confirms such written notice and the contents and posting thereof.

Section 3. This Ordinance shall be effective from and after its passage and approval, and it is so ordered.

PASSED AND APPROVED, this 25th day of June, 2012.

CITY OF LA PORTE

By: _____
Louis R. Rigby, Mayor

ATTEST:

_____
Patrice Fogarty
City Secretary

APPROVED:

_____
Clark T. Askins
City Attorney

INTERLOCAL AGREEMENT

THIS INTERLOCAL AGREEMENT ("Agreement"), made and entered into pursuant to the Texas Interlocal Cooperation Act, Chapter 791, Texas Government Code ("Agreement") by and between the City of Pasadena, Texas (the "City of Pasadena") a municipal corporation and the City of La Porte, Texas (the "City of La Porte") a municipal corporation

WITNESSETH

WHEREAS, the Texas Local Government Code provides that adjacent municipalities may by mutual agreement apportion their extraterritorial jurisdictional boundaries (ETJ);

WHEREAS, La Porte and Pasadena have areas within their respective ETJ that they desire to apportion to promote the orderly growth and development of their respective jurisdictions;

WHEREAS, La Porte and Pasadena find that apportionment of their ETJ boundary lines will be to the benefit of the citizens of both cities and their adjacent areas and will facilitate planning and services which contribute to orderly growth and development of the regional areas;

WHEREAS, La Porte and Pasadena now desire to apportion their exclusive ETJ boundary lines, whereby La Porte will release from its exclusive ETJ certain land to be relinquished to and become part of the ETJ of Pasadena and subsequently to be annexed by Pasadena into its corporate limits, and Pasadena will relinquish to La Porte its exclusive ETJ rights to certain land to be relinquished to and become part of the ETJ of La Porte;

WHEREAS, that approximate 99 acre tract (the "Pasadena Annexation Property") described on Exhibit "A" attached hereto and by this reference incorporated herein for all purposes, is a part of and within the exclusive extraterritorial jurisdiction of the City of La Porte;

WHEREAS, that approximate 73 acre tract (the "La Porte Property") described on Exhibit "B" attached hereto and by this reference incorporated herein for all purposes, is a part of and partially within the exclusive extraterritorial jurisdiction and partially within the corporate limits of the City of Pasadena;

WHEREAS, the City of Pasadena and the City of La Porte desire to adjust the boundaries of the City of Pasadena and the City of La Porte, such that the Pasadena Annexation Property shall become a part of the exclusive ETJ of the City of Pasadena, and the La Porte Property shall become a part of the exclusive ETJ of the City of La Porte;

WHEREAS, the boundaries of the City of Pasadena and the City of La Porte will be adjusted in accordance with the ETJ reapportionment, annexation and disannexation descriptions contained in the Exhibits A, B, and D attached hereto and by this reference incorporated for all purposes;

WHEREAS, the City of Pasadena and the City of La Porte agree and understand that the City of Pasadena intends, after approval by both parties of this Agreement, to annex into the corporate limits of the City of Pasadena the approximate 99 acre tract, also named herein the "Pasadena Annexation Property" and described herein by Exhibit "A"; and, to disannex that portion of the La Porte Property that is contained within the corporate limits of Pasadena; and

WHEREAS, after such ETJ boundary adjustment by the City of La Porte placing the La Porte property within La Porte's exclusive ETJ, and by the City of Pasadena placing the Pasadena Annexation Property within Pasadena's exclusive ETJ, and subsequent annexation by the City of Pasadena of the Pasadena Annexation Property, the City of Pasadena desires to make certain drainage improvements to the Pasadena Annexation Property (the "Drainage Improvements") as further described on Exhibit "C" attached hereto and by this reference incorporated herein for all purposes, which Drainage Improvements are anticipated to provide drainage improvements for the benefit of both the City of Pasadena and the City of La Porte.

NOW THEREFORE, for and in consideration of the payment of Ten Dollars ($10.00) cash and other good and valuable consideration paid each unto the other, the sufficiency of which is hereby acknowledged and confessed the City of Pasadena and the City of La Porte hereby agree as follows:

1. The City of La Porte will take all required governmental processes to approve this Agreement, which when adopted does hereby cause and implement the adjustment of its boundaries such that the La Porte Property will become a part of and within the exclusive extraterritorial jurisdiction of the City of La Porte, and the Pasadena Annexation Property can be released to and become a part of and within the exclusive extraterritorial jurisdiction of the City of Pasadena; for purposes of La Porte's acquisition of the La Porte Property into its ETJ it is stipulated to by both parties that the portion of the La Porte property that is within the corporate limits of Pasadena, and which shall be disannexed by Pasadena pursuant to but after approval of this Agreement, shall immediately become part of the exclusive ETJ of La Porte upon the effective date of said disannexation, without further action required by La Porte.

2. The City of Pasadena will take all required governmental processes to approve this Agreement, which when approved does hereby cause and implement the adjustment of its boundaries such that the Pasadena Annexation Property will become a part of and within the extraterritorial jurisdiction of the City of Pasadena, and that portion of the La Porte Property that is within the ETJ of Pasadena will be released to and become a part of and within the exclusive extraterritorial jurisdiction of the City of La Porte. Furthermore, after approval of

this Agreement, Pasadena will take all required governmental processes to disannex that portion of the La Porte Property that is within the corporate limits of Pasadena and to annex the Pasadena Annexation Property. It is agreed by Pasadena that at such time that it legally disannexes that portion of the La Porte Property that is within its corporate limits, such portion of property shall become part of and within the exclusive extraterritorial jurisdiction of the City of La Porte, in accordance with paragraph one (1) above. The properties to be annexed and disannexed by Pasadena are described on the attached Exhibits "A" and "B" attached hereto and incorporated herein for all purposes.

3. The City of Pasadena plans to proceed with its project regarding the construction on the Pasadena Annexation Property including the relocation of two driveways and the Drainage Improvements, pursuant to the provisions set forth on Exhibit "C", and with the construction of the Drainage Improvement being subject to and contingent upon the satisfaction of its studies, investigations and assessments, and all governmental permits and approvals, including any environmental approvals; Construction of said Improvements shall be completed no later than three years from the date of this agreement.

4. La Porte and Pasadena understand and agree that Pasadena's construction of Drainage Improvements constitutes no guarantee or assurance that such Improvements will, in fact, cause or result in a reduction of flood waters or flooding in any area in La Porte. La Porte and Pasadena further agree that such Drainage Improvements as outlined in this Agreement do, in fact, constitute the best efforts of Pasadena to mitigate flooding in the area described.

5. The extraterritorial jurisdiction boundary realignment between La Porte and Pasadena as herein described is in the best interests of the property owners and inhabitants of both cities with the common extraterritorial jurisdiction boundary line and apportionment of extraterritorial jurisdiction between La Porte and Pasadena being hereby determined, fixed and ratified in accordance with this agreement.

6. La Porte and Pasadena do hereby covenant and agree to protect, preserve, and defend the hereinabove described boundary, realignment, and appointment of extraterritorial jurisdiction;

7. La Porte and Pasadena agree and resolve that the adoption by both cities of this Interlocal Agreement, and the relinquishment and acceptance of the above described territories by each party does not mitigate, diminish, or lessen in any manner the rights that either party may have at law or in equity, to challenge or contest any other annexations or attempted annexations made by the other party;

8. The City of Pasadena and the City of La Porte understand and agree that the La Porte Property is currently the subject of an Industrial District Agreement

between the City of Pasadena and Lyondell Chemical Company in effect until the year 2018 and that the La Porte Property can only be transferred to La Porte's exclusive ETJ upon approval by Lyondell of rescission of its Industrial District Agreement with the City of Pasadena. As such, it is agreed by the City of Pasadena that this Agreement shall be null and void, and of no effect, unless 1) Pasadena secures the written consent of Lyondell to rescission of said Industrial District Agreement and first provides evidence of such written agreement to La Porte, and 2) Lyondell provides a written commitment to La Porte indicating its willingness to enter into an Industrial District Agreement with La Porte.

9. This Agreement shall become effective and binding only after it has been approved by an ordinance of the governing body of the City of Pasadena and an ordinance of the governing body of the City of La Porte. Compliance with this paragraph shall be evidenced by certified copies of the ordinances of the City of Pasadena and the City of La Porte, approving this Agreement, with such certified copies being attached to this Agreement as Exhibit "E" hereto. This Agreement shall be executed in duplicate originals. Furthermore, both Pasadena and La Porte agree that this agreement is contingent upon, and subject to the completed and final annexation into the corporate limits of the City of Pasadena, Texas of the Pasadena Annexation Property.

This agreement upon approval by ordinance of this agreement and satisfaction of the conditions contained herein of the City Council of the City of Pasadena, Texas and the City of La Porte, Texas provides full authority to Pasadena and La Porte to commence the annexation and disannexation of property as described herein.

(Signature Page to follow)

EXECUTED on the dates set forth below and EFFECTIVE as of the date first set forth above.

Approved by the City of Pasadena, Texas on the 3rd day of July, 2012.

ATTEST:

THE CITY OF PASADENA, TEXAS

By: Linda Rorick

Name: LINDA RORICK

Title: City Secretary

By: Johnny Isbell

Name: JOHNNY ISBELL

Title: Mayor

Approved by the City of La Porte, Texas on the 25th day of June, 2012.

CITY OF LA PORTE ATTEST HARRIS COUNTY, TEXAS

THE CITY OF LA PORTE, TEXAS

By: Patrice Fogarty

Name: PATRICE FOGARTY

Title: City Secretary

By: Louis R. Rigby

Name: Louis R. Rigby

Title: Mayor

0853134.02

000001-000913:11/03/2

EXHIBIT "A"

Description of 99 Acre Pasadena Annexation Property

EXHIBIT A
Parcel Description
William H. Jones Survey, A-482
Harris County, Texas

Being a tract of land situated in the William M. Jones Survey, A-482, Harris county, Texas and more particularly described as follows with all bearings referenced to the Texas Coordinate System, South Central Zone:

BEGINNING at a point in the center of Willow Springs Gully (200 feet wide) being and angle point in the existing City of Pasadena City Limit line, from which a Copperweld Rod Number 3106 found for the northeasterly corner of Willow Springs Gully described in deed to Harris county Flood Control District recorded under File Number E189514, Film Cole number 105-19-0095 of the H.C.O.P.R.R.P. bears North 86 degrees 59 minutes 55 seconds East, a distance of 100.00 feet, also being in the southerly right-of-way line of Fairmont Parkway (250 feet wide) as described in deed recorded in Volume 3642, Page 41 of the Harris County Deed Records (H.C.D.R.);

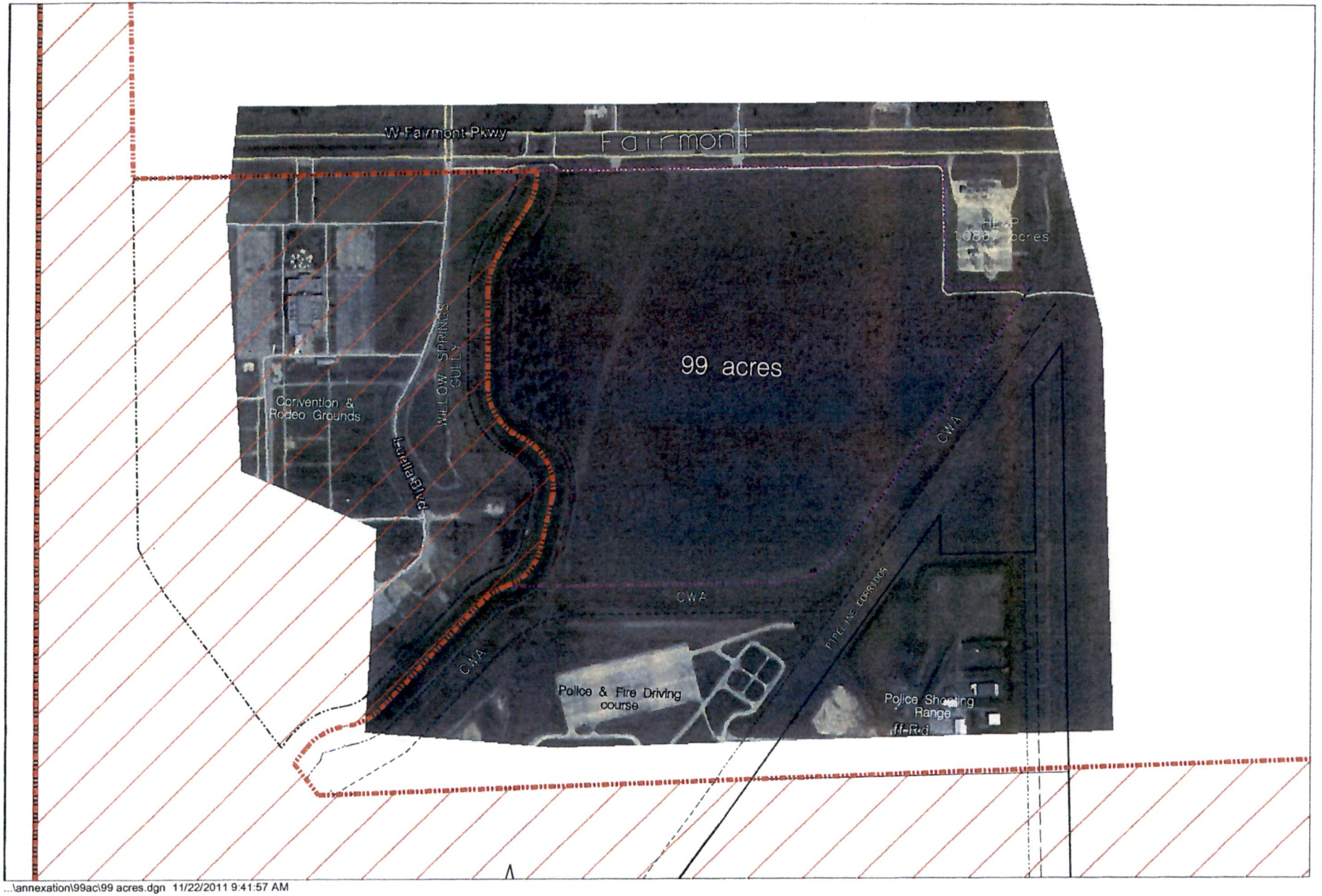
1. **THENCE**, easterly, along said southerly right-of-way line, to the westerly line of a called 1.0867 acre tract described to Houston Lighting and Power Company recorded under File Number F637287 Film Code Number 197 14-0384 of the H.C.O.P.R.R.P.;

2. **THENCE**, southerly, along the westerly line of said 1.0867 acre tract to the southwesterly corner of said 1.0867 acre tract;

3. **THENCE**, easterly, along the southerly line of said 1.0867 acre tract to the northerly line of a Coastal Water Authority (CWA) tract, recorded under File number K874511, Film Code Number 067-63-1867 of the H.C.O.P.R.R.P.;

4. **THENCE**, southwesterly and westerly; along the said northerly line of a Coastal Water Authority tract and an extension of said line, to it's intersection with the said centerline of Willow Springs Gully (the existing City of Pasadena City Limit line);

5. **THENCE**, northerly, along said centerline of Willow Springs Gully to the **POINT OF BEGINNING.**



...\annexation\99ac\99 acres.dgn 11/22/2011 9:41:57 AM

EXHIBIT "B"

Description of 73 Acre La Porte Annexation Property

DE-ANNEXATION

Being a tract of land out of the George B. McKinstry League, Abstract 47, Harris County Texas and being more particularly described as follows:

BEGINNING at the a the northwest corner of a called 30.984 acre tract as described in a deed recorded at Harris County Clerks file Number T963395 also being located in the east right of way line of Bay Area Boulevard (150 feet wide);

THENCE, northerly along the said east right of way of Bay Area Boulevard to the northerly line of a existing city of Pasadena City Limit 200 foot strip (ordinance 69-310, 80-240);

THENCE, easterly along the said existing city of Pasadena City Limit line to the west line of the GH&SA Railroad (existing city of Pasadena City Limit line);

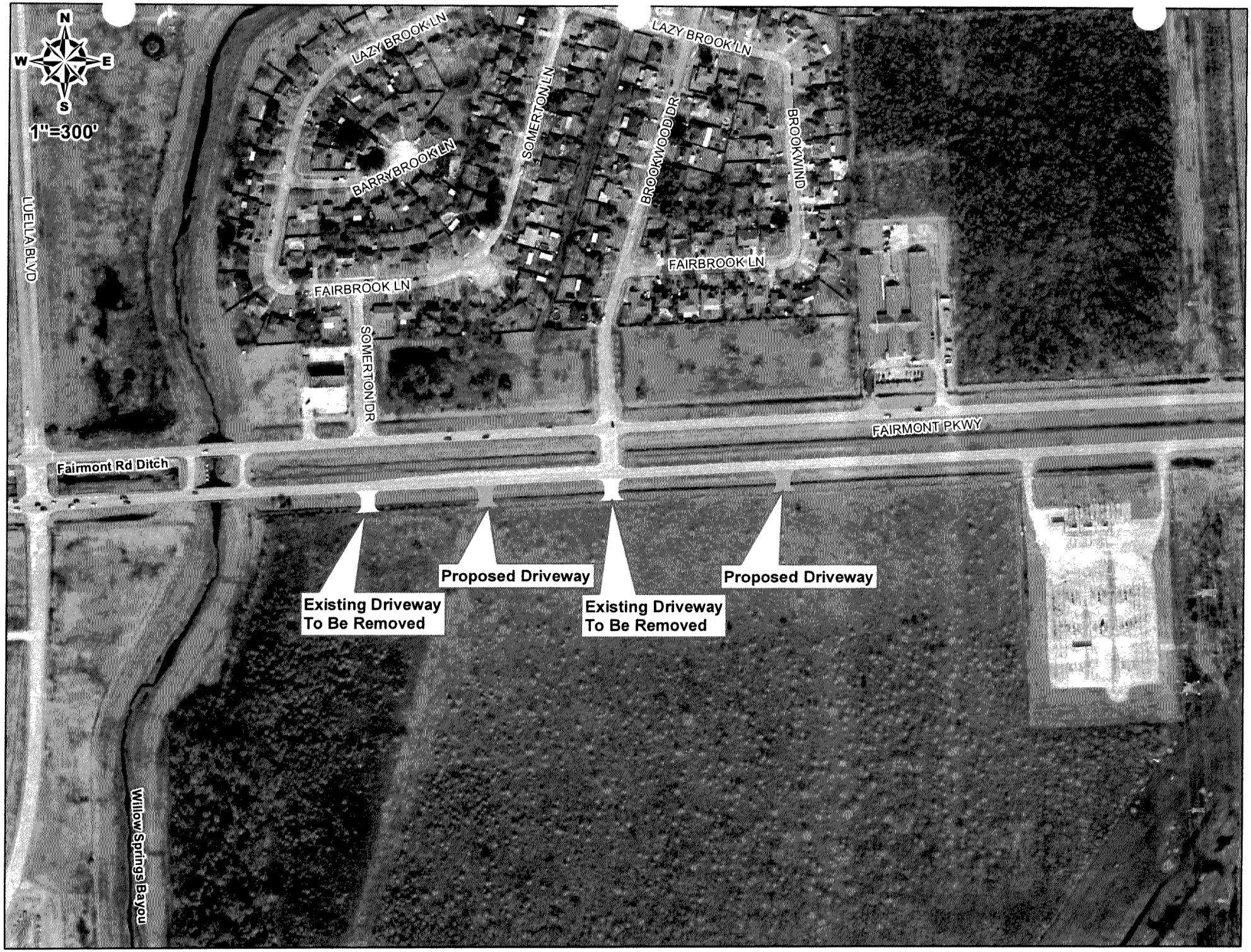
THENCE, southerly along said west line of the GH&SA Railroad to an extension of the northerly line of said called 30.984 acre tract;

THENCE, southwesterly along said extension of the northerly line of said called 30.984 acre tract to the **PLACE OF BEGINNING**.

...\annexation\99ac\55 acre.dgn 11/21/2011 1:31:15 PM

EXHIBIT "C"

Relocation of Two Driveways and Description of Drainage Improvements


N
W
E
S
1"=300'
LAZY BROOK LN
LAZY BROOK LN
SOMERTON LN
BROOKWOOD DR
BROOKWIND
BARRYBROOK LN
FAIRBROOK LN
FAIRBROOK LN
SOMERTON DR
LUELLA BLVD
FAIRMONT PKWY
Fairmont Rd Ditch
Existing Driveway To Be Removed
Proposed Driveway
Existing Driveway To Be Removed
Proposed Driveway
Willow Springs Bayou

PROPOSED DRAINAGE IMPROVEMENTS

- As part of a planned redevelopment of the Pasadena Convention Center and Fairgrounds site south of W. Fairmont Parkway and on either side of Willow Springs Bayou (Harris County Flood Control Channel B112-00-00), it is the intention of the City of Pasadena to make drainage improvements benefitting all those who depend upon this channel for effective flood control.

- Improvements will include provision for at least 100 acre-feet of storm water detention as required to reduce peak event runoff volumes from impervious areas served by the channel.

- The Brookglen Subdivision in the City of LaPorte, located immediately upstream of the Pasadena Convention Center and Fairgrounds site, consists of approximately 600 single-family homes. The area has experienced severe flooding, with a number of homes suffering repetitive losses. In its 2009 *City Wide Drainage Study* (available on the City's web site), the City of LaPorte identified several capital projects directly benefitting the drainage area immediately north of the Pasadena Convention Center and Fairgrounds site.

- Based on these substantial potential capital project costs and other engineering studies we believe that reductions in the range of ½ foot to one foot of the water surface elevation through downstream improvements constructed by the City of Pasadena would have significant financial benefit to the City of LaPorte, both in terms of reduced exposure to flood losses and opportunity to avoid certain capital expenditures.

- Pasadena will provide La Porte the necessary modeling information performed by Klotz Associates, Inc. for future LOMR submittal to FEMA.

EXHIBIT "D"

Properies to be Annexed and Deannexed by Pasadena

ANNEXATION
ALONG BAY AREA BOULEVARD
AND 10 FOOT STRIP

Being a tract of land out of the George B. McKinstry League, Abstract 47, Harris County Texas and being more particularly described as follows:

BEGINNING at the a the northwest corner of a called 30.984 acre tract as described in a deed recorded at Harris County Clerks file Number T963395 also being located in the east right of way line of Bay Area Boulevard (150 feet wide);

THENCE, southwesterly along an extension of the northerly line of said called 30.984 acre tract across Bay Area Boulevard to the west right of way of Bay Area Boulevard;

THENCE, northerly along the said west right of way of Bay Area Boulevard to the southerly line of the existing city of Pasadena City Limit 200 foot strip (ordinance 69-310, 80-240);

THENCE, easterly along the said southerly line of the existing city of Pasadena City Limit line to the east right of way of Bay Area Boulevard;

THENCE, southerly along the said east right of way of Bay Area Boulevard to the extension of a line 10 feet north of and parallel to the northerly line of said called 30.984 acre tract;

THENCE, northeasterly along said line 10 feet north of and parallel to the said northerly line of said called 30.984 acre tract to the westerly line of the existing City of Pasadena City Limit 200 foot strip (ordinance 69-310, 80-240);

THENCE, southerly along said west line of said existing city of Pasadena City Limit 200 foot strip (ordinance 69-310, 80-240) to an extension of the northerly line of said called 30.984 acre tract;

THENCE, southwesterly along said extension of the northerly line of said called 30.984 acre tract to the **PLACE OF BEGINNING.**

DE ANNEXATION
PROPOSED LA PORTE ETJ

Being a tract of land out of the George B. McKinstry League, Abstract 47, Harris County Texas and being more particularly described as follows:

BEGINNING at the a the northwest corner of a called 30.984 acre tract as described in a deed recorded at Harris County Clerks file Number T963395 also being located in the east right of way line of Bay Area Boulevard (150 feet wide);

THENCE, northerly along the said east right of way of Bay Area Boulevard to the northerly line of the existing city of Pasadena City Limit 200 foot strip (ordinance 69-310, 80-240) and the current City Limit of La Porte;

THENCE, easterly along the said northerly line of the existing city of Pasadena City Limit line to the easterly line of the existing City of Pasadena City Limit 200 foot strip (ordinance 69-310, 80-240) and the current City Limit of La Porte;

THENCE, southerly along said east line of said existing city of Pasadena City Limit 200 foot strip (ordinance 69-310, 80-240) and the current City Limit of La Porte to an extension of the northerly line of said called 30.984 acre tract;

THENCE, southwesterly along said extension of the northerly line of said called 30.984 acre tract to the **PLACE OF BEGINNING**.

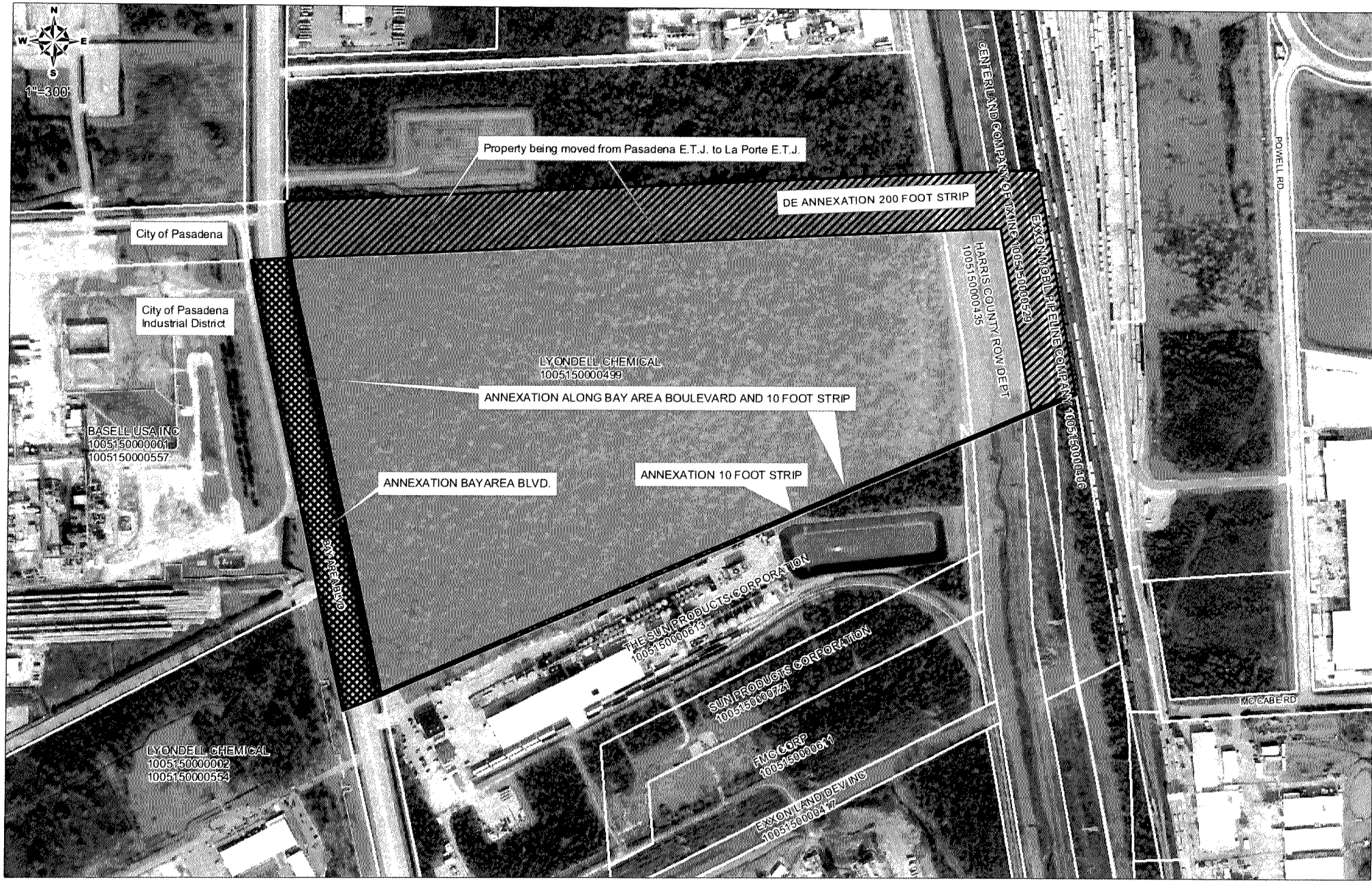

N
W
E
S
1"=300'
Property being moved from Pasadena E.T.J. to La Porte E.T.J.
DE ANNEXATION 200 FOOT STRIP
City of Pasadena
City of Pasadena Industrial District
CENTERLAND COMPANY OF TX INC 1005150000224
EXXON MOBIL PIPELINE COMPANY 1005150000406
HARRIS COUNTY ROW DEPT 1005150000435
POWELL RD
LYONDELL CHEMICAL 1005150000499
ANNEXATION ALONG BAY AREA BOULEVARD AND 10 FOOT STRIP
BASELL USA INC 1005150000001 1005150000557
ANNEXATION BAYAREA BLVD.
ANNEXATION 10 FOOT STRIP
BAY AREA BLVD
THE SUN PRODUCTS CORPORATION 1005150000613
SUN PRODUCTS CORPORATION 1005150000724
FMC CORP 1005150000611
EXXON LAND DEV INC 1005150000417
MCCABE RD
LYONDELL CHEMICAL 1005150000002 1005150000554

EXHIBIT "E"

Certified Copies of Ordinances of the City of Pasadena and the City of La Porte

RECEIVED

JUL 13 2012

CITY SECRETARY'S OFFICE

July 10, 2012

City of La Porte
Attn: Louis R. Rigby, Mayor
604 W. Fairmont Parkway
La Porte, Texas 77571

Re: Ordinance No. 2012-006

Honorable Mayor Rigby:

Enclosed please find one (1) executed copy of the Contract Agreement with your company for your records. (Also, enclosed is a copy of the signed Ordinance).

Should you have any questions or need additional information, please do not hesitate to contact our office at (713-475-5513).

Sincerely,

Emma Bridwell
City Secretary
Office Assistant

Enclosures

1-10-12 agenda

AGENDA REQUEST

1 A

☒ ORDINANCE ☐ RESOLUTION NO: 2012- 006

CAPTION: AN ORDINANCE AUTHORIZING AND APPROVING AN ANNEXATION AGREEMENT BY AND BETWEEN THE CITY OF PASADENA AND THE CITY OF LA PORTE TO AMEND THE EXTRATERRITORIAL (ETJ) AGREEMENT BETWEEN SAID CITIES BY ADJUSTING THE BOUNDARIES OF EACH CITY SUCH THAT PROPERTY, AS DESCRIBED BY EXHIBIT "A" OF THE AGREEMENT, WITHIN THE ETJ OF THE CITY OF LA PORTE SHALL BECOME PART OF THE CITY OF PASADENA AND PROPERTY, AS DESCRIBED BY EXHIBIT "B" OF THE AGREEMENT, WITHIN THE ETJ OF THE CITY OF PASADENA SHALL BECOME PART OF THE ETJ OF THE CITY OF LA PORTE.

RECOMMENDATIONS & JUSTIFICATION: APPROVE ANNEXATION AGREEMENT BETWEEN THE CITY OF PASADENA AND THE CITY OF LA PORTE FOR EXCHANGE OF PROPERTY WITHIN THEIR RESPECTIVE ETJ'S.

(IF ADDITIONAL SPACE IS REQUIRED, PLEASE ATTACH SECOND PAGE)

COST: $0.00 TASK NO: BUDGETED: YES ☐ NO ☐

ACCOUNT NUMBER(S): REQUESTING DEPARTMENT: Engineering

Robin S. Green, Jr. DATE: 12/16/2011
REQUESTING PARTY (TYPED)

PURCHASING DEPARTMENT

APPROVED:

CONTROLLER CERTIFICATION

UE CLARK
CITY ATTORNEY

MAYOR

COUNCIL ACTION	
FIRST READING:	FINAL READING:
Morrison MOTION	Cote MOTION
Cote SECOND	Morrison SECOND
1-10-12 DATE	7-3-12 DATE
Mays! Harrison DEFERRED:	

ORDINANCE NO. 2012-006

An Ordinance authorizing and approving an Annexation Agreement by and between the City of Pasadena and the City of La Porte to amend the extraterritorial (ETJ) agreement between said cities by adjusting the boundaries of each city such that property, as described by Exhibit "A" of the agreement, within the ETJ of the City of La Porte shall become part of the City of Pasadena and property, as described by Exhibit "B" of the agreement, within the ETJ of the City of Pasadena shall become part of the ETJ of the City of La Porte.

BE IT ORDAINED BY THE CITY COUNCIL OF THE CITY OF PASADENA:

SECTION 1. That the Annexation Agreement by and between the City of Pasadena and the City of La Porte, attached hereto as Exhibit "1", to amend the extraterritorial (ETJ) agreement between said cities by adjusting the boundaries of each city such that property, as described by Exhibit "A" of the agreement, within the ETJ of the City of La Porte shall become part of the City of Pasadena and property, as described by Exhibit "B" of the agreement, within the ETJ of the City of Pasadena shall become part of the ETJ of the City of La Porte, is hereby authorized and approved.

SECTION 2. That the City Council officially determines that a sufficient written notice of the date, hour, place and subject of this meeting of the City Council was posted at a place convenient to the public at the City Hall of the City for the time required by law preceding this meeting, as required by the Open Meetings Law, Chapter 551, Texas Government Code; and that this meeting has been open to the public as required by law at all times during which this ordinance and the subject matter thereof has been discussed,

considered and formally acted upon. The City Council further confirms such written notice and the contents and posting thereof.

PASSED ON FIRST READING by the City Council of the City of Pasadena, Texas in regular meeting in the City Hall this the 10th day of January, A.D., 2012.

APPROVED this the 10th day of January, A.D., 2012.

JOHNNY ISBELL, MAYOR
OF THE CITY OF PASADENA, TEXAS

ATTEST:

LINDA RORICK
CITY SECRETARY
CITY OF PASADENA, TEXAS

APPROVED:

LEE CLARK
CITY ATTORNEY
CITY OF PASADENA, TEXAS

PASSED ON SECOND AND FINAL READING by the City Council of the City of Pasadena, Texas in regular meeting in the City Hall this the 3rd day of July, A. D., 2012.

APPROVED this the 3rd day of July, A.D., 2012.

JOHNNY ISBELL, MAYOR
OF THE CITY OF PASADENA, TEXAS

ATTEST:

LINDA RORICK
CITY SECRETARY
CITY OF PASADENA, TEXAS

APPROVED:

LEE CLARK
CITY ATTORNEY
CITY OF PASADENA, TEXAS

Garrison, Bonnie

From: ctaskins@swbell.net
Sent: Friday, August 31, 2012 8:57 AM
To: Garrison, Bonnie; Alexander, Corby; Leach, Traci; Tietjens, Tim; Knox Askins
Cc: Malik, Masood; Lee, Peggy; Green, Shannon; CSO - Staff
Subject: Re: Notice of Municipal Annexation by City of Pasadena, TX

This is pursuant to the interlocal agreement reached between CLP and Pasadena a few months ago, for exchange of land.

From: Garrison, Bonnie
Sent: Friday, August 31, 2012 8:17 AM
To: Alexander, Corby ; Leach, Traci ; Tietjens, Tim ; Knox Askins
Cc: Malik, Masood ; Lee, Peggy ; Green, Shannon ; ctaskins@swbell.net ; CSO - Staff
Subject: Notice of Municipal Annexation by City of Pasadena, TX

Please see the attached paperwork received by our office, from Robin Green of the public works department of the City of Pasadena, Texas regarding the annexation of the area described into the corporate limits of the City of Pasadena, Texas.

Bonnie Garrison

Records Specialist

604 W Fairmont Pkwy

La Porte, TX 77571

281-470-5022

Life is not measured by the number of breaths we take, but by the moments that take our breath away!

August 23, 2012

Via CMRRR 7001 0360 0003 8976 8291

City of La Porte, City Secretary
604 W. Fairmont Parkway
La Porte, Texas 77571

RE: Notice of Municipal Annexation

This is to notify you that the City of Pasadena, Texas is hereby initiating proceedings to annex the area described by the enclosed Exhibit "A" into the corporate limits of the City of Pasadena, Texas.

Sincerely,

Robin Green
Public Works Department

1. City of Pasadena, City Secretary
   P.O. Box 672
   Pasadena, Texas 77501

2. City of La Porte, City Secretary
   604 W. Fairmont Parkway
   La Porte, Texas 77571

3. La Porte Fire Department
   124 South 2nd Street
   La Porte, Texas 77571

4. ETMC EMS Pasadena
   213 W. Southmore Ave. # 300
   Pasadena, TX 77502-1026

5. ETMC EMS
   P.O. Box 387
   Tyler, TX 75710

6. Hon. Ed Emmett
   Harris County Judge
   1001 Preston, Suite 911
   Houston, TX 77002

7. Pasadena Volunteer Fire Department
   1001 E. Shaw, Suite B-100
   Pasadena, TX 77506

8. Mr. Lloyd Graham
   Superintendent La Porte ISD
   1002 San Jacinto St.
   La Porte, TX 77571

9. Lyondell Chemical
   Attn: Property Tax Department
   P.O. Box 3646
   Houston, TX 77253-3646

EXHIBIT A
Parcel Description
William H. Jones Survey, A-482
Harris County, Texas

Being a tract of land situated in the William M. Jones Survey, A-482, Harris county, Texas and more particularly described as follows with all bearings referenced to the Texas Coordinate System, South Central Zone:

BEGINNING at a point in the center of Willow Springs Gully (200 feet wide) being and angle point in the existing City of Pasadena City Limit line, from which a Copperweld Rod Number 3106 found for the northeasterly corner of Willow Springs Gully described in deed to Harris county Flood Control District recorded under File Number E189514, Film Cole number 105-19-0095 of the H.C.O.P.R.R.P. bears North 86 degrees 59 minutes 55 seconds East, a distance of 100.00 feet, also being in the southerly right-of-way line of Fairmont Parkway (250 feet wide) as described in deed recorded in Volume 3642, Page 41 of the Harris County Deed Records (H.C.D.R.);

1. **THENCE**, easterly, along said southerly right-of-way line, to the westerly line of a called 1.0867 acre tract described to Houston Lighting and Power Company recorded under File Number F637287 Film Code Number 197 14-0384 of the H.C.O.P.R.R.P.;

2. **THENCE**, southerly, along the westerly line of said 1.0867 acre tract to the southwesterly corner of said 1.0867 acre tract;

3. **THENCE**, easterly, along the southerly line of said 1.0867 acre tract to the northerly line of a Coastal Water Authority (CWA) tract, recorded under File number K874511, Film Code Number 067-63-1867 of the H.C.O.P.R.R.P.;

4. **THENCE**, southwesterly and westerly; along the said northerly line of a Coastal Water Authority tract and an extension of said line, to it's intersection with the said centerline of Willow Springs Gully (the existing City of Pasadena City Limit line);

5. **THENCE**, northerly, along said centerline of Willow Springs Gully to the **POINT OF BEGINNING.**

ANNEXATION
ALONG BAY AREA BOULEVARD
AND 10 FOOT STRIP

Being a tract of land out of the George B. McKinstry League, Abstract 47, Harris County Texas and being more particularly described as follows:

BEGINNING at the northwest corner of a called 30.984 acre tract as described in a deed recorded at Harris County Clerks file Number T963395 also being located in the east right of way line of Bay Area Boulevard (150 feet wide);

THENCE, southwesterly along an extension of the northerly line of said called 30.984 acre tract across Bay Area Boulevard to the west right of way of Bay Area Boulevard;

THENCE, northerly along the said west right of way of Bay Area Boulevard to the southerly line of the existing city of Pasadena City Limit 200 foot strip (ordinance 69-310, 80-240);

THENCE, easterly along the said southerly line of the existing city of Pasadena City Limit line to the east right of way of Bay Area Boulevard;

THENCE, southerly along the said east right of way of Bay Area Boulevard to the extension of a line 10 feet north of and parallel to the northerly line of said called 30.984 acre tract;

THENCE, northeasterly along said line 10 feet north of and parallel to the said northerly line of said called 30.984 acre tract to the westerly line of the existing City of Pasadena City Limit 200 foot strip (ordinance 69-310, 80-240);

THENCE, southerly along said west line of said existing city of Pasadena City Limit 200 foot strip (ordinance 69-310, 80-240) to an extension of the northerly line of said called 30.984 acre tract;

THENCE, southwesterly along said extension of the northerly line of said called 30.984 acre tract to the **PLACE OF BEGINNING**.

ANNEXATION
ALONG BAY AREA BOULEVARD

Being a tract of land out of the George B. McKinstry League, Abstract 47, Harris County Texas and being more particularly described as follows:

BEGINNING at the northwest corner of a called 30.984 acre tract as described in a deed recorded at Harris County Clerks file Number T963395 also being located in the east right of way line of Bay Area Boulevard (150 feet wide);

THENCE, southwesterly along an extension of the northerly line of said called 30.984 acre tract across Bay Area Boulevard to the west right of way of Bay Area Boulevard;

THENCE, northerly along the said west right of way of Bay Area Boulevard to the southerly line of the existing city of Pasadena City Limit 200 foot strip (ordinance 69-310, 80-240);

THENCE, easterly along the said southerly line of the existing city of Pasadena City Limit line to the east right of way of Bay Area Boulevard;

THENCE, southerly along the said east right of way of Bay Area Boulevard to the northerly line of said called 30.984 acre tract to the **PLACE OF BEGINNING.**

5/23/12

ANNEXATION
10 FOOT STRIP
LYONDELL

Being a tract of land out of the George B. McKinstry League, Abstract 47, Harris County Texas and being more particularly described as follows:

BEGINNING at the northwest corner of a called 30.984 acre tract as described in a deed recorded at Harris County Clerks file Number T963395 also being located in the east right of way line of Bay Area Boulevard (150 feet wide);

THENCE, northerly along the said east right of way of Bay Area Boulevard to an extension of a line 10 feet north of and parallel to the northerly line of said called 30.984 acre tract;

THENCE, northeasterly along said line 10 feet north of and parallel to the said northerly line of said called 30.984 acre tract to the westerly line of a Harris County Flood Control Strip as recorded in volume 8260, page 124 of the Harris County Deed Records;

THENCE, southerly along said westerly line of a Harris County Flood Control Strip to the northerly line of said called 30.984 acre tract;

THENCE, southwesterly along said northerly line of said called 30.984 acre tract to the **PLACE OF BEGINNING.**

ANNEXATION
10 FOOT STRIP
HARRIS COUNTY FLOOD CONTROL

Being a tract of land out of the George B. McKinstry League, Abstract 47, Harris County Texas and being more particularly described as follows:

COMMENCING at the northwest corner of a called 30.984 acre tract as described in a deed recorded at Harris County Clerks file Number T963395 also being located in the east right of way line of Bay Area Boulevard (150 feet wide);

THENCE, northeasterly along the northerly line of said called 30.984 acre tract to the westerly line of a Harris County Flood Control Strip as recorded in volume 8260, page 124 of the Harris County Deed Records to the **POINT OF BEGINNING** ;

THENCE, northerly along the said westerly line of a Harris County Flood Control Strip to an extension of a line 10 feet north of and parallel to the northerly line of said called 30.984 acre tract;

THENCE, northeasterly along said line 10 feet north of and parallel to the said northerly line of said called 30.984 acre tract to the easterly line of said Harris County Flood Control Strip;

THENCE, southerly along said easterly line of a Harris County Flood Control Strip to an extension of the northerly line of said called 30.984 acre tract;

THENCE, southwesterly along said extension of northerly line of said called 30.984 acre tract to the **PLACE OF BEGINNING**.

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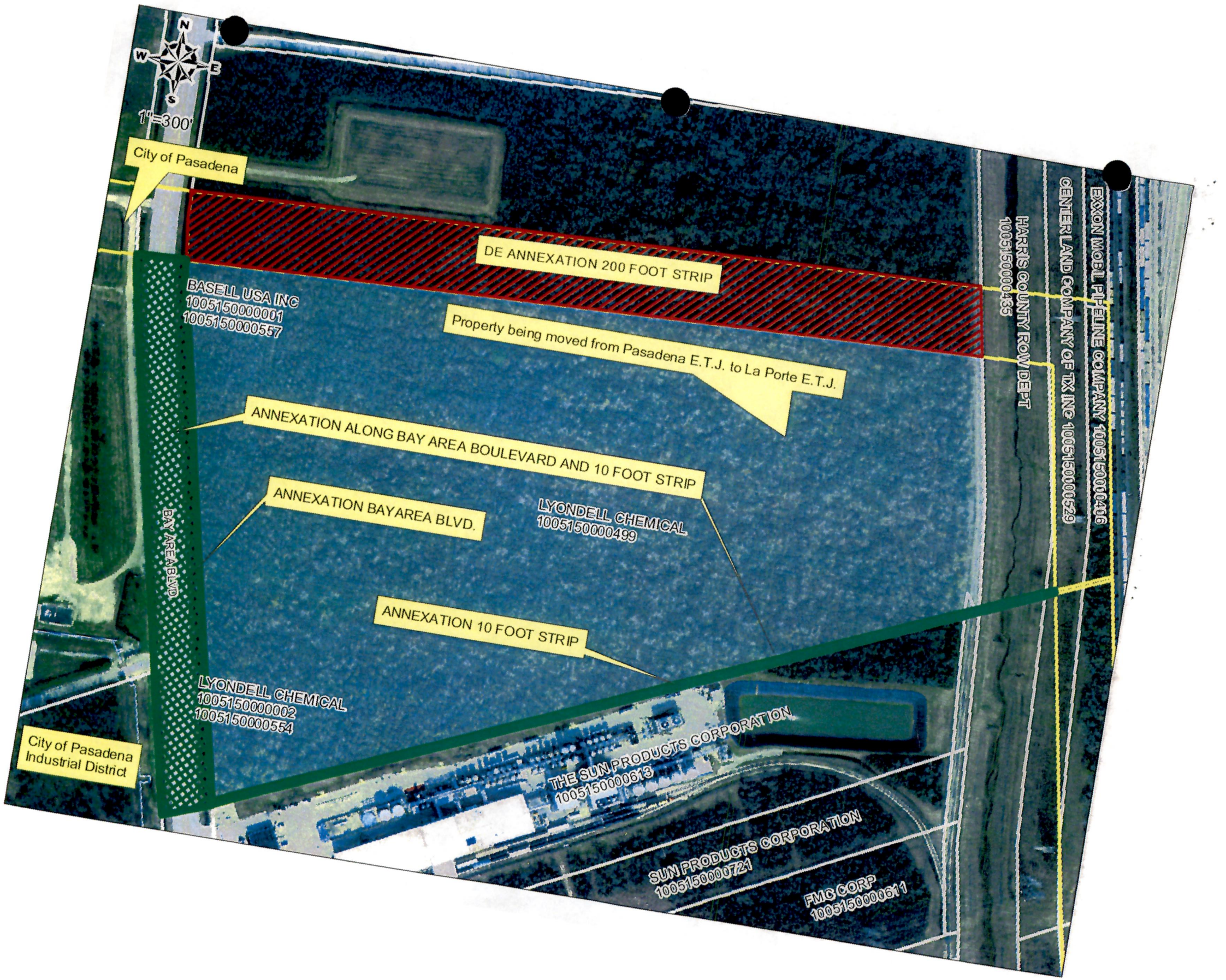
N
W
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1"=300'
City of Pasadena
DE ANNEXATION 200 FOOT STRIP
BASELL USA INC
1005150000001
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Property being moved from Pasadena E.T.J. to La Porte E.T.J.
ANNEXATION ALONG BAY AREA BOULEVARD AND 10 FOOT STRIP
ANNEXATION BAYAREA BLVD.
LYONDELL CHEMICAL
1005150000499
BAY AREA BLVD.
ANNEXATION 10 FOOT STRIP
LYONDELL CHEMICAL
1005150000002
1005150000554
City of Pasadena
Industrial District
THE SUN PRODUCTS CORPORATION
1005150000613
SUN PRODUCTS CORPORATION
1005150000721
FMC CORP
1005150000611
HARRIS COUNTY ROW DEPT
1005150000435
CENTERLAND COMPANY OF TX INC 1005150000529
EXXON MOBIL PIPELINE COMPANY 1005150000406

REQUEST FOR DRAINAGE & FLOODING COMMITEE AGENDA ITEM

Agenda Date Requested: July 13, 2020

Requested By: Lorenzo Wingate, P.E., C.F.M.

Department: Public Works

(•) Report ( ) Resolution ( ) Ordinance

Exhibits: Project map
Project update chart
Harris County Drainage Network Map
Bayside Terrace Update

Appropriation	
Source of Funds:	
Account Number:	
Amount Budgeted:	
Amount Requested:	
Budgeted Item:	( ) Yes ( ) No

SUMMARY

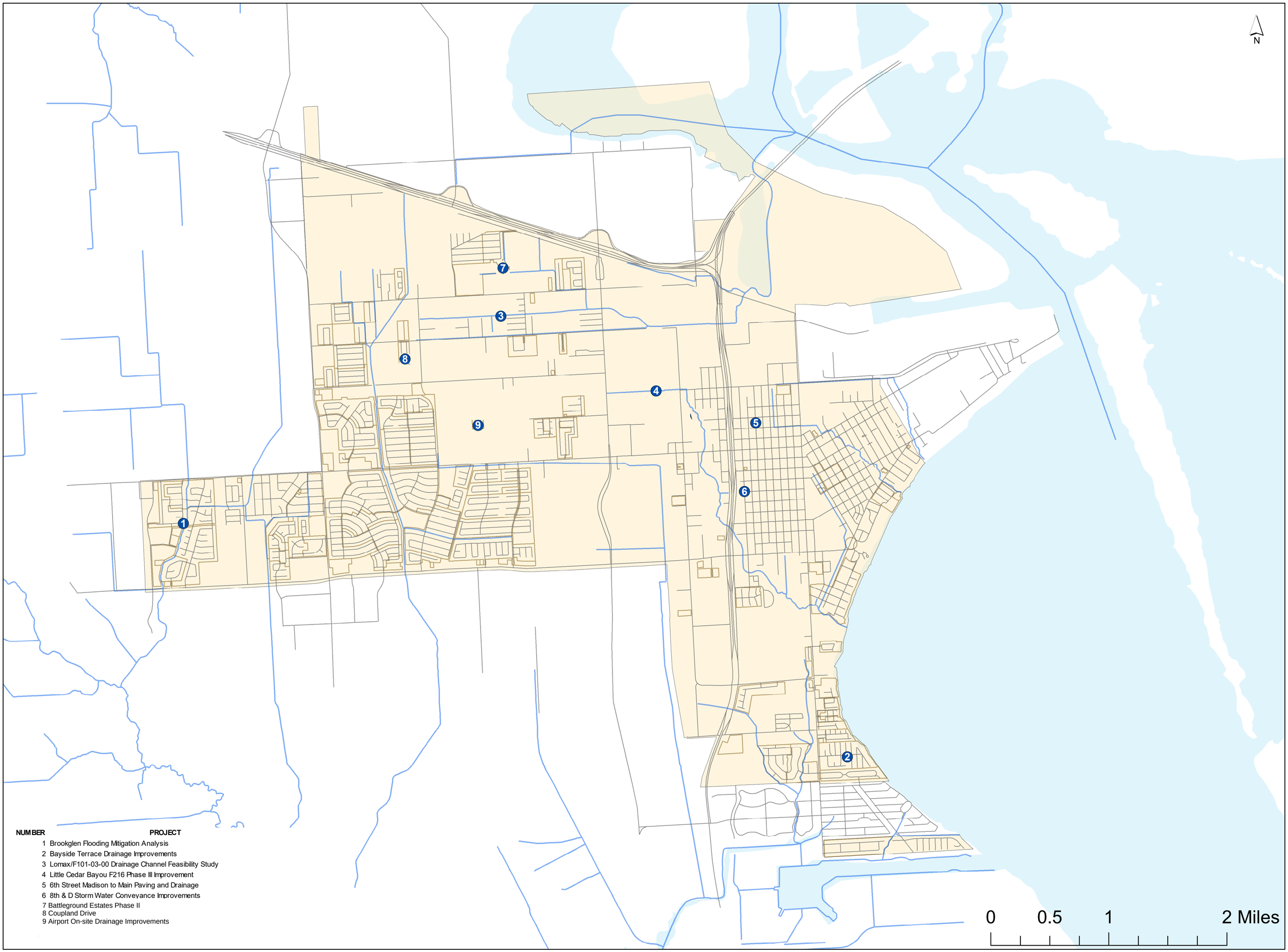
Refer to attached exhibit(s) for updates on various drainage projects throughout the City.

RECOMMENDED MOTION

Approved for Drainage Committee Agenda

Corby D. Alexander, City Manager **Date**

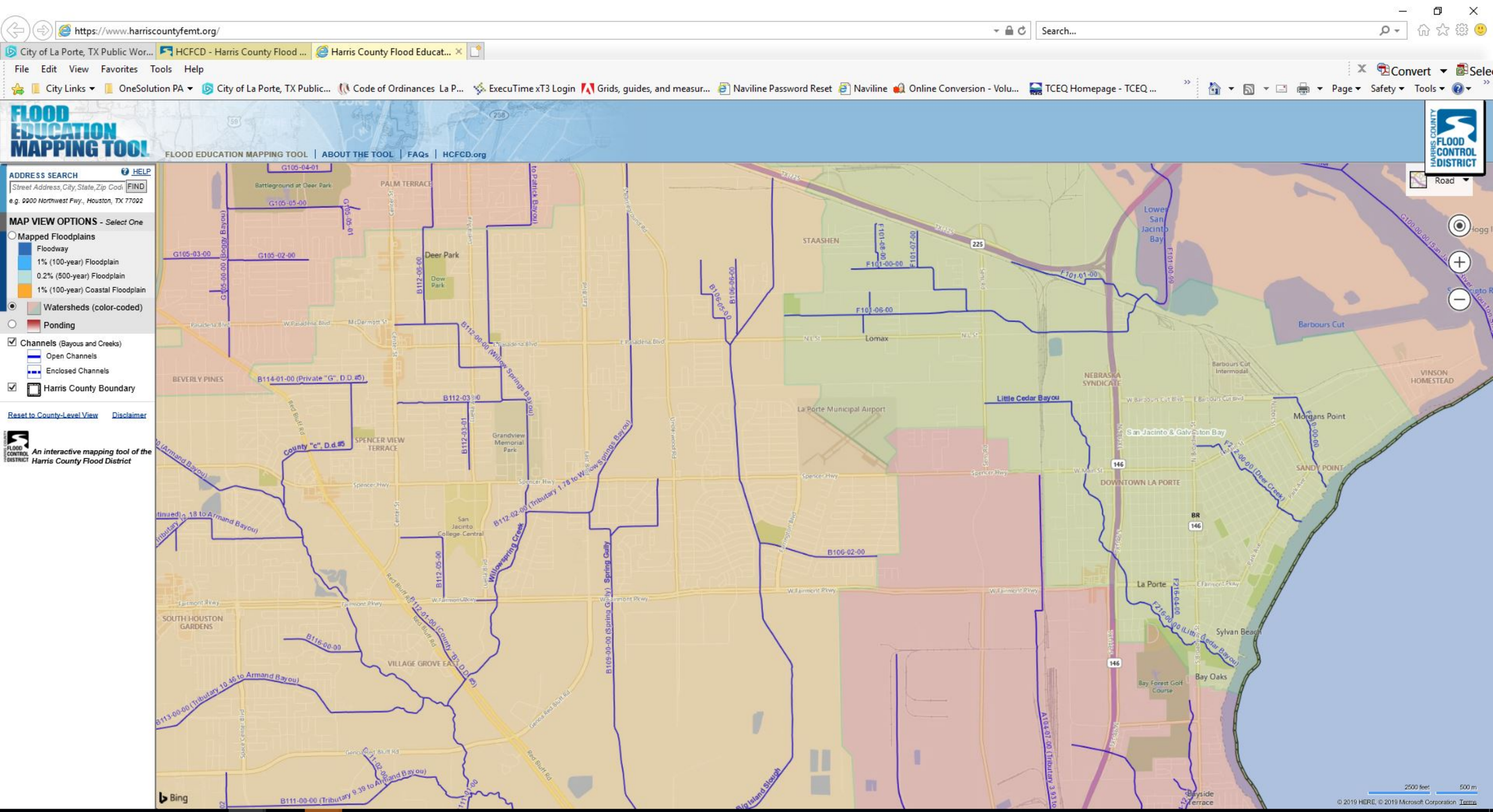
The City of La Porte Drainage Projects 2019



NUMBER	PROJECT
1	Brookglen Flooding Mitigation Analysis
2	Bayside Terrace Drainage Improvements
3	Lomax/F101-03-00 Drainage Channel Feasibility Study
4	Little Cedar Bayou F216 Phase III Improvement
5	6th Street Madison to Main Paving and Drainage
6	8th & D Storm Water Conveyance Improvements
7	Battleground Estates Phase II
8	Coupland Drive
9	Airport On-site Drainage Improvements

DRAINAGE PROJECTS

NO.	PROJECT	PROJECT MANAGER	DESCRIPTION	PROJECT PHASE (Feasibility/Preliminary Design/Final Design/Bidding/Construction)	Status	Potential Grant Funding	Potential COLP Cost Share	COLP Budgeted Amount	Estimated Completion Date	% Complete (Phase)	On Schedule
1	Brookglen Flooding Mitigation Analysis	Public Works	The 2009 City-wide Drainage Study identifies the Brookglen subdivision as an area with significant drainage/flooding problems, attributed to a mixture of inadequate sewerage and insufficient channel capacity within the B112-00-00 Channel. Compounded improvements recommended within the City-wide Drainage Study could reduce the flood risk within the Brookglen area. This analysis would expand upon the recommendations provided within 2009 study.	Feasibility	Staff working with HCFCD to develop regional solution. HCFCD is planning mitigation efforts within the 8800 block of Gladwyne Ct. Staff to submit application for CBDG-MIT funding by September 30, 2020.	$4,000,021.50	$1,000,005.38	$1,275,000.00	March 2022	10%	No
2	Bayside Terrace Drainage Improvements	Public Works	Approximately 800 linear feet of RCP pipe, ranging in size from 15" to 24", exists within the Bayside Terrance Subdivision, which has not been properly maintained due to access issues attributed to limited access to infrastructure, provided within a five foot utility easement. Portions of Hamilton Street and Fondren Street utilize this system to convey stormwater to its outfall point of Galveston Bay. The system fails to function properly, causing flooding within the adjacent portion(s) of the subdivision. A proposed drainage study would discuss feasibility of rerouting this flows from the 800 feet of RCP, towards Bayside Dr. and utilizing the existing system within Bayside Dr. to convey the storm water within the existing system.	Preliminary Design	Consultant provided Bayside Terrace update on June 18, 2020 (See presentation attached). 1st draft of PER is expected the week of July 6th, 2020.	$2,200,000.00	N/A	$650,000.00	March 2022	65%	No
3	Lomax/F101-03-00 Drainage Channel Improvements	Public Works	Harris County Flood Control District's (HCFCD) F101-06-00 Channel system conveys storm water runoff from the Lomax area and ultimately outfalls into Lower San Jacinto Bay. The downstream section of the channel has been improved to ultimate capacity. An existing pipeline corridor, containing several pipelines located at depths ranging from approximately 2' to 18', cross the channel, limiting the depth of potential channel improvements. Moderate/heavy rain events, compounded with backwater conditions from this section of the channel, contributes to wide-spread flooding within the Lomax Area.	Preliminary Design	HCFCD has initiated PER phase and HCFCD consultants are currently performing preliminary design efforts	N/A	N/A	$950,000.00	March 2022	10%	No
4	Little Cedar Bayou F216 Phase III Improvements	Public Works	Phase I and Phase II Improvements to Little Cedar Bayou, from Hwy 146 to Madison, have either been completed or are currently awarded for construction. Phase I and Phase II improvements include, but are not limited to, excavating and disposing off- site soil as required for the new channel alignment, clearing and grubbing, demolition of existing structures, erosion control, and site restoration for approximately 5,533 LF of channel. Approximately 4,680 LF of channel remains unimproved upstream, with those improvements slated to be included within this project, to be considered Phase III. Survey data has been collected on this most upstream section. Routine maintenance of clearing overgrowth, trees, and obstructions; minor erosion control and slope stabilization; and desilting is planned to maintain existing conveyance capacity. Those maintenance operations are projected to begin late 4th quarter 2018 or early 1st quarter 2019 (calendar year). The following Phase III mitigation action is proposed, as recommended within the Hydraulic Analysis for Little Cedar Bayou Watershed HCFCD Unit F216-00-00: lowering the flow line of the Bayou 1 - 2 feet, from W. Madison to Sens Rd. Current channel side slopes would be modified to achieve 3:1 side slopes from W Madison St. to Sens Rd. An estimated 200,000 cubic yards are to be excavated from the channel. Over excavation is provided to yield sufficient storage volume in the pond after siltation and build-up in the pond bottom.	Feasibility	COLP staff is coordinating with HCFCD staff to establish scopes of work for consultants and avoid duplication of effort.	N/A	N/A	$1,355,232.00	March 2022	0%	No
5	6th Street Madison to Main Paving and Drainage	Public Works	The segment of 6th St from W. Madison St to W. Main St is considered part of Old La Porte, which was generally noted in the City-Wide Drainage Study as not having sufficient storm sewer capacity due to undersized storm sewer, undersized storm inlets, or not enough storm inlets. RPS-Klotz provided an analysis of the existing storm sewer system and identified problem areas within the project limits. Additional analysis is required to determine most efficient improvement alternative.	Final Design	Executed contract with GLO effective March 9, 2019 through August 5, 2021. Staff received executed agreement with Harris County for $3.4M allocation in early January. Phase I design has began 1st week of July. Staff preparing to present Phase 2 design proposal to council at 2nd meeting in July.	$3,798,532.30	$125,000.00	$1,140,000.00	August 2021	0%	Yes
6	8th & D Storm Water Conveyance Improvements	Public Works	The area generally bounded by 8th Street to the west, Main Street to the north, 5th Street to the east, and D Street to the south experiences flooding during heavy rain events due to undersized culverts within the area. Increasing culvert sizes within the area will provide additional conveyance capacity within the existing open ditch system.	Final Design	This project has been incorporated into the 7th Street Rehabilitation Project. Staff reviewed 60% plans. Consultant is revising plans to address staff comments.	N/A	N/A	$139, 340 / $1,850,000	June 2021	60%	Yes
7	Battleground Estates Phase II	Public Works	A proposed conditions hydraulic model was developed during the preliminary design for the N P Street Culvert Improvement Project, which recommended replacing the upstream portion of the existing composite structure at N P Street, with structures matching the downstream portion of the composite structure. That project allows for full utilization of the structure's capacity, as well as protect the channel during rainfall events that produce higher amounts of runoff. Per the recommendations of the Phase 1 report, a more detailed Phase 2 engineering analysis of segments F101-00-00 and F101-08-00, that are upstream of N P Street, as well as an evaluation of the roadside ditch drainage conduits within Battleground Estates should be performed to identify necessary improvements to address structural flooding within the area. The more detailed study would evaluate the impacts of culverts located upstream of N P Street, along F-101-00-00 resulting from the 10-, 50-, and 100-year rain event. Channel improvements, and increasing culvert sizes to provide sufficient capacity within culverts along the roadside ditches are the anticipated mitigation efforts.	Feasibility	Staff is currently reviewing funding availability prior to moving forward with feasibility analysis/PER.	$880,500.00	$220,125.00	$65,000.00	August 2022	0%	No
8	Coupland Drive	Public Works	The proposed storm sewer improvements include re-sloping Coupland Drive to drain towards inlets located throughout the subdivision. The inlets will drain into proposed storm sewer ranging in size from 24" to 30" RCP. This storm sewer will then flow underneath the existing roadside ditch along L Street to a combined outfall with the existing roadside ditch to Big Island Slough. The proposed storm sewer underneath the existing ditch on L Street will be 42" RCP and the combined outfall will need to be a 60" RCP. These improvements will result in no net fill within the Big Island Slough 100-year floodplain. The proposed storm sewer was sized for the 5 year storm event, per the City of La Porte drainage criteria.	Final Design	Staff has reviewed 60% plans and provided comments to consultant. Construction to be incorporated into Lomax Lift Station Consolidation Project.	N/A	N/A	$1,110,000.00	July 2022	45%	Yes
9	Airport On-site Drainage Improvements	Public Works	On-site and offsite study determined there is no impact from airport drainage run off to the area north(Lomax) of the airport. The study determined there is impact to the Glen Meadows Subdivision. Onsite detention and increased capacity will be designed to mitigate the impact on Glen Meadows.	Construction	Contractor is approximately 95% complete with construction improvements on west side of airport. Downstream connection to Spencer Highway is installed; construction of one of two detention ponds is complete. Schedule shows a completion approximately 75 days before the end of contract time.	$2,200,000.00	$244,500.00	$248,467.00	May 2020	95%	Yes
10	Airport Detention Analysis	Public Works	An analysis will be performed to determine the feasibility of providing additional detention on the airport site to mitigate impacts of storm water runoff from the airport onto adjacent properties.	Feasibility	Staff has been finalizing procurement of services. Consultant expected to begin efforts in early July. Phase one expected by September 30, 2020.	N/A	N/A	$22,520.00	December 2020	0%	Yes


https://www.harriscountyfemt.org/
Search...
City of La Porte, TX Public Wor...
HCFCD - Harris County Flood ...
Harris County Flood Educat...
File Edit View Favorites Tools Help
City Links
OneSolution PA
City of La Porte, TX Public...
Code of Ordinances La P...
ExecuTime xT3 Login
Grids, guides, and measur...
Naviline Password Reset
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Online Conversion - Volu...
TCEQ Homepage - TCEQ ...
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Safety
Tools
FLOOD EDUCATION MAPPING TOOL
FLOOD EDUCATION MAPPING TOOL | ABOUT THE TOOL | FAQs | HCFCD.org
HARRIS COUNTY FLOOD CONTROL DISTRICT
ADDRESS SEARCH
HELP
Street Address, City, State, Zip Code
FIND
e.g. 9900 Northwest Fwy., Houston, TX 77092
MAP VIEW OPTIONS - Select One
Mapped Floodplains
Floodway
1% (100-year) Floodplain
0.2% (500-year) Floodplain
1% (100-year) Coastal Floodplain
Watersheds (color-coded)
Ponding
Channels (Bayous and Creeks)
Open Channels
Enclosed Channels
Harris County Boundary
Reset to County-Level View
Disclaimer
An interactive mapping tool of the Harris County Flood District
Road
Bing
2500 feet
500 m
© 2019 HERE, © 2019 Microsoft Corporation Terms

BAYSIDE TERRACE PRELIMINARY ENGINEERING REPORT

PROGRESS MEETING

JUNE 18, 2020

HALFF

PROGRESS UPDATE

AGENDA

- Background
- Existing Topography
- Existing Utilities
- Survey
- Preliminary Drainage Layouts
- Next Steps

PROGRESS UPDATE

BACKGROUND

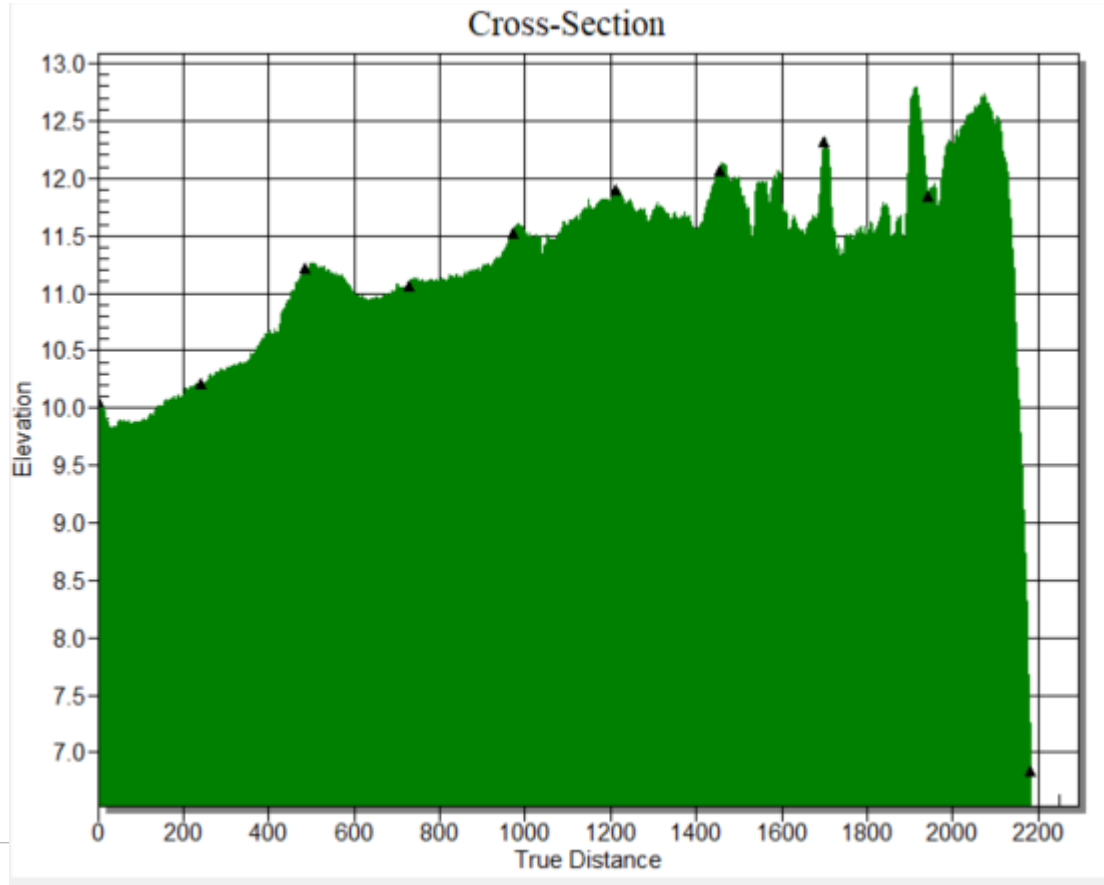
- 206 residential structures
- 21 commercial structures
- $1.1 Million in damages during Harvey

HALFF

PROGRESS UPDATE

TOPOGRAPHY

- Generally slopes from east to west
- Bay to the east
- TxDOT Road to the west



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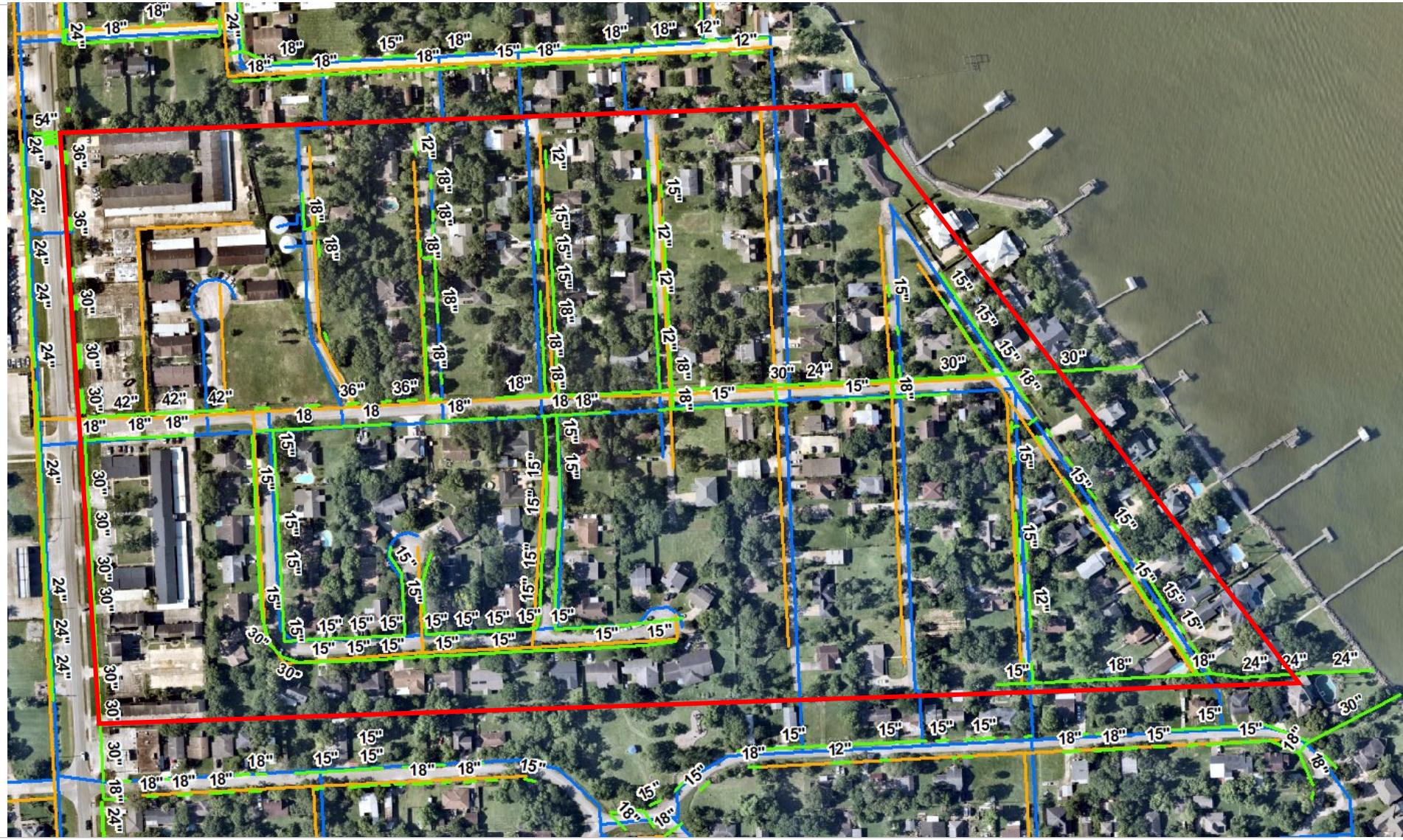
PROGRESS UPDATE

UTILITIES

- Storm Sewer (**Green**)
  - 12” RCP to 42” RCP
  - 30” RCP Outfall
- Sanitary Sewer (**Orange**)
  - 4” to 8” RCP, PVC
  - Outfalls west to TxDOT roadway
- Water (**Blue**)
  - 2” to 8” AC



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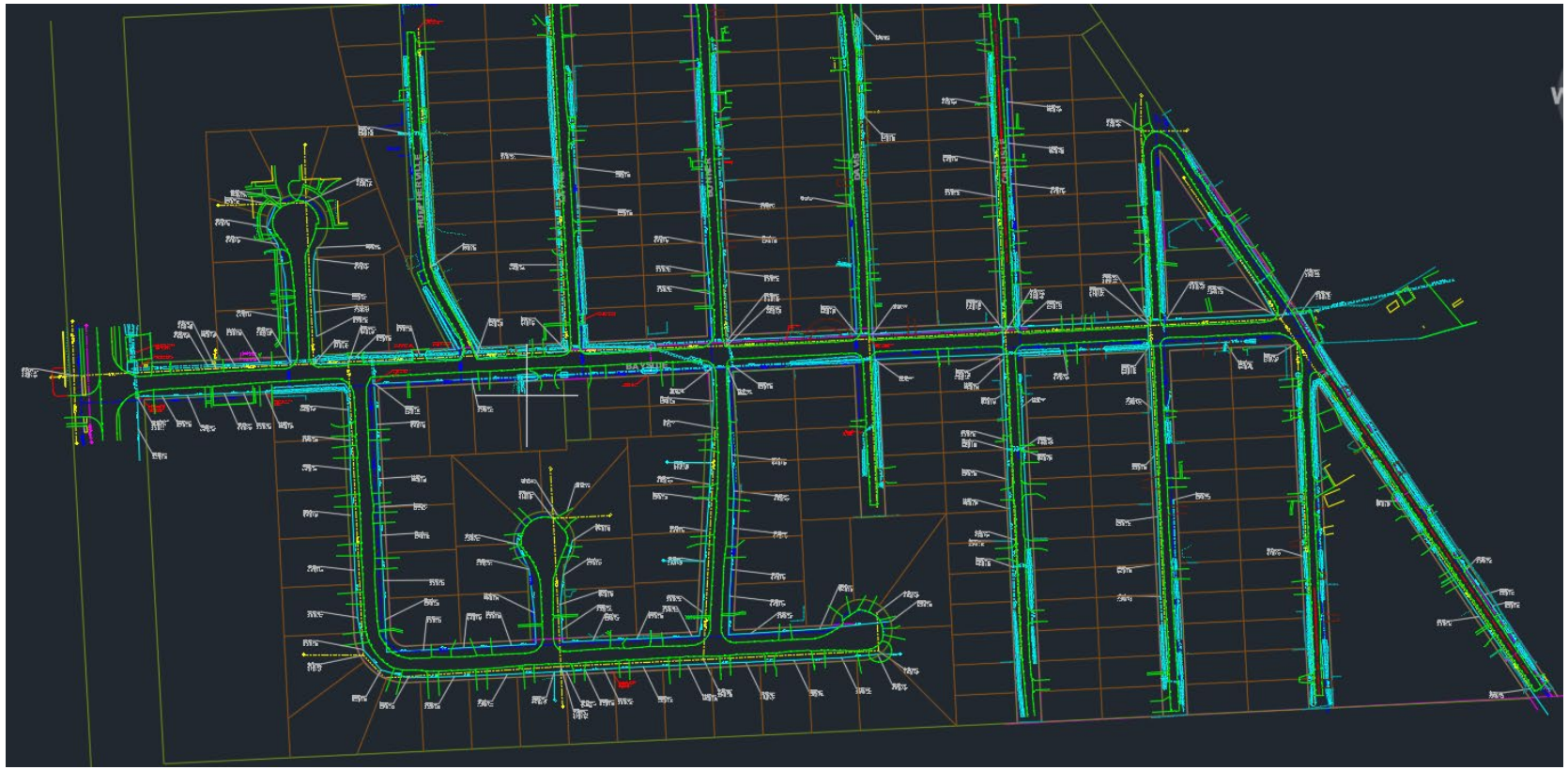
PROGRESS UPDATE

SURVEY

- Survey status
  - Preliminary survey with sanitary flowlines, storm flowlines, paving, and topo shots has been completed
  - Water line included per La Porte GIS
  - Private utility map requests complete for Centerpoint gas/electric
  - ROW and lot lines delineated based on available information



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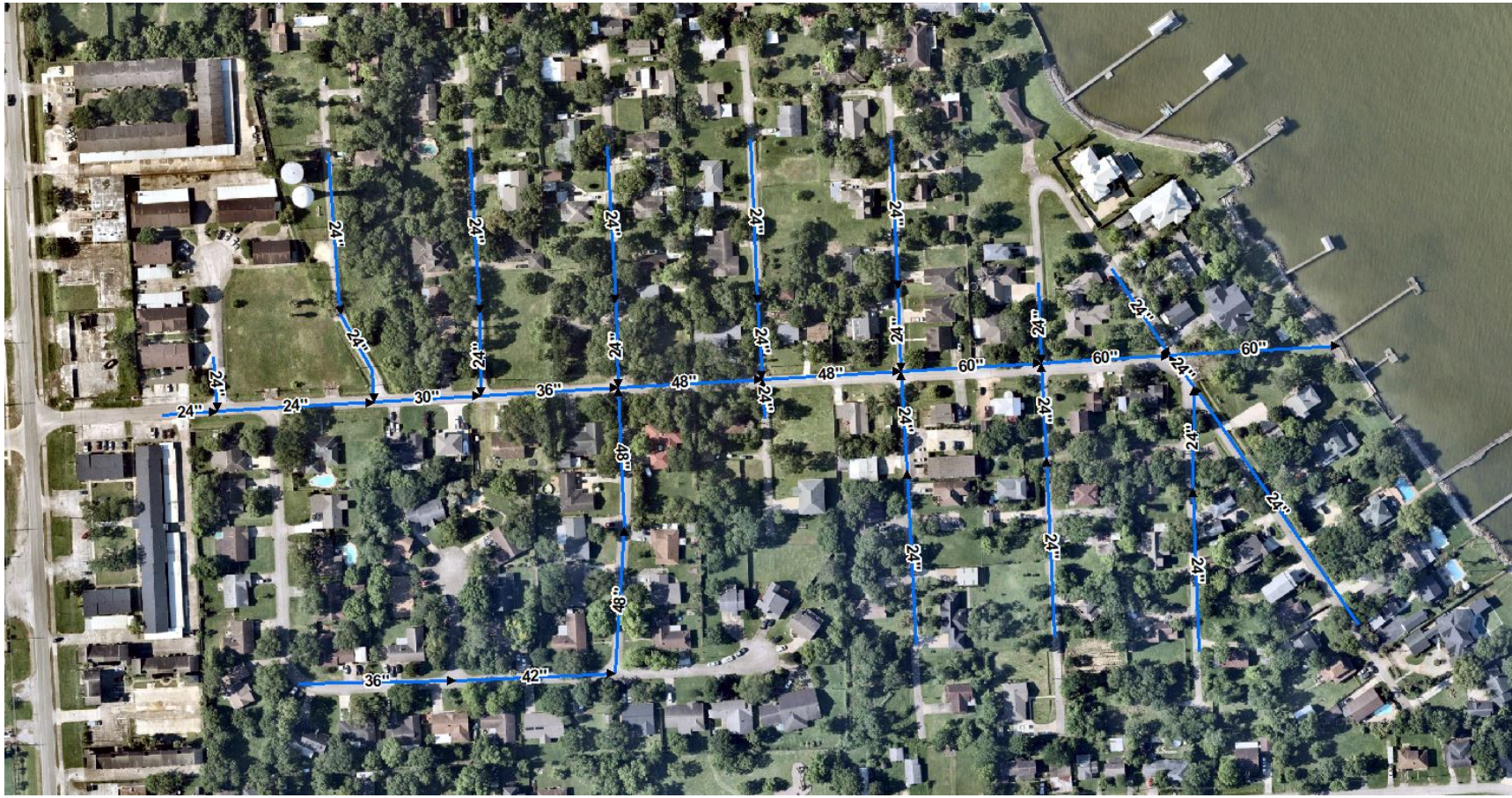
PROGRESS UPDATE

PRELIMINARY DRAINAGE

- Alternative 1 – Storm Sewer
- 24” RCP to 60” RCP
- Storm sewer flows east to upsized outfall into the bay
- Conversion of streets from asphalt to roadside ditch to full curb and gutter street sections
- Provides 100-year LOS



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PROGRESS UPDATE

PRELIMINARY DRAINAGE

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- Storm sewer flows east to upsized outfall into the bay
- Conversion of streets from asphalt to roadside ditch to full curb and gutter street sections
- Provides 100-year LOS

HALFF

PROGRESS UPDATE

PRELIMINARY DRAINAGE

- Alternative 2 – Roadside Ditches
- 2’ to 4’ Deep ditches
- East portion flows east to Bay
  - Includes upsizing outfall to 48” through park
- West portion flows west to TxDOT
- Provides 5-year LOS

HALFF

PROGRESS UPDATE

PRELIMINARY DRAINAGE

- Alternative 2 – Roadside Ditches
- 2’ to 4’ Deep
- East portion flows east to Bay
  - Includes upsizing outfall to 48” through park
- West portion flows west to TxDOT
- Provides 5-year LOS

HALFF

PROGRESS UPDATE

NEXT STEPS

- Analyze combined roadside ditch/storm sewer option
- Finalize drainage alternatives
- Identify utility conflicts/relocations
- Finalize cost estimates for three alternatives
- Conference call to discuss cost estimates for each alternative prior to PER submittal
- Draft PER submittal to COLP
  - Goal is to submit week of July 6th

HALFF

QUESTIONS?

REQUEST FOR DRAINAGE & FLOODING COMMITEE AGENDA ITEM

Agenda Date Requested: July 13, 2020

Requested By: Lorenzo Wingate, P.E., C.F.M.

Department: Public Works

(•) Report ( ) Resolution ( ) Ordinance

Exhibits:

Appropriation	
Source of Funds:	
Account Number:	
Amount Budgeted:	
Amount Requested:	
Budgeted Item:	( ) Yes ( ) No

SUMMARY

Opportunity to discuss any drainage concerns not covered by previous items.

RECOMMENDED MOTION

Approved for Drainage Committee Agenda

Corby D. Alexander, City Manager **Date**